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Northeastern University

Basic College Bulletin

1984-1985

College of Arts and Sciences
Boston-Bouvé College of Human Development
Professions
College of Business Administration
College of Computer Science
College of Criminal Justice
College of Engineering
Lincoln College
College of Nursing
College of Pharmacy and
Allied Health Professions
University College
(Alternative Freshman-Year Program)

The New England Association of Schools and Colleges accredits schools and colleges in the six New England states. Membership in one of the six regional accrediting associations in the United States indicates that the school or college has been carefully evaluated and found to meet standards agreed upon by qualified educators. Colleges support the efforts of public school and community officials to have their secondary schools meet the standards of membership.

Northeastern University supports the efforts of secondary school officials and governing bodies to have their schools achieve regional accredited status to provide reliable assurance of the quality of the educational preparation of its applicants for admission.

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The *Northeastern University Bulletin* contains *current information* regarding programs, curricula, cooperative education opportunities, career opportunities, campus life, and admissions, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

In reading this *Bulletin*, whether you are using it to make your selection of a college to attend or are trying to select a career goal, a major, a concentration, or even a course, you must keep certain important points in mind.

We at Northeastern will do our best to make available to you the finest education we can provide, the most stimulating atmosphere in which to learn, and the most congenial conditions under which you may enjoy the learning experience. But the quality and the rate of progress of your academic career are in large measure dependent upon your own abilities, commitment, and effort. You will be a full participant in an educational partnership. We will and, indeed, can only make the opportunities available to you; it is up to you to take advantage of them.

This is equally true with your career upon graduation. While we can offer the opportunity through an ever-improving co-op program for you to acquire work experience, which we believe will give you an advantage over some other applicants, we cannot guarantee that you will obtain any particular job. That will depend upon your own skills, achievement, presentation, and other factors, such as market conditions at that time. Similarly, in many professions and occupations, there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern, and they may vary from state to state. While we will be ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because we cannot know what your expectations and understandings are unless you tell us.

In brief, what we are saying to you is that we are here to offer you educational opportunities and choices and to assist you in finding the direction in which you want to steer your educational experience. But you are a partner in this venture with an obligation and responsibility to yourself.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, cancelling of scheduled classes and other academic activities, and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements, and acts of public authorities. (The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities, or performance, but its inability or failure to do so shall not subject it to liability.)

A Message from the President

One of the truly difficult questions facing a prospective college student is whether to choose a course of study that will enhance the mind or one that will produce skills which can be used immediately in the working world. At Northeastern University we try to blend both these goals into one. We've been doing it for seventy-five years, and we believe our efforts too have been remarkably successful.

Our method is called "cooperative education." It allows a student to alternate periods of academic study with periods of employment in positions related to his or her special field of interest. Co-op is the cornerstone of Northeastern's national and international reputation. Each year it places 9,500 Northeastern students with 2,750 employers throughout the world.

The working experience these students receive—in hospitals, industry, government, social services and law enforcement agencies across the nation and in foreign countries—provides them with distinct advantages for job placement upon graduation. About 40 per cent of our graduating seniors, in fact, accept full-time positions with their former co-op employers.

Last year, students earned an average of \$6,200 a year in their co-op positions. In addition, more than \$56 million in financial aid was awarded to Northeastern students.

But at Northeastern this very practical approach to a higher education does not diminish our emphasis on the academic life. For example, students at Northeastern are taught by a distinguished faculty, which traditionally has emphasized excellence in teaching as a professional goal. Last fall research funding at Northeastern totaled \$8.1 million; much of the research is done at the University's many institutions and research centers, such as the seaside Marine Science and Maritime Studies Center in Nahant, Massachusetts. Several scholarly journals originate at Northeastern, including the highly-regarded *New England Quarterly*.

Northeastern also offers a diverse extracurricular life, with approximately 200 athletic, social, political, religious and cultural organizations. Among these are the Student Government Association, special interest groups such as Hus-Skiers and Outing Club, fraternal organizations, professional societies, academic clubs, and the Reserve Officers' Training Corps.

And our location, of course, is a superb asset in itself. Northeastern is in the heart of Boston, known the world over for its exciting cultural, intellectual, and historical attractions. The University is situated on public transportation routes that provide a convenient and inexpensive means of traveling throughout the Boston metropolitan area. Indeed, at Northeastern we like to say that the city of Boston is our "extended" campus.

Northeastern University, in short, is an exhilarating blend of classroom study and practical work experience, balanced with access to the finest recreational and cultural opportunities. I am delighted that you have already shown an interest in Northeastern, and I invite you to visit us and see first-hand what our University can offer you.

Kenneth G. Ryder

President



Tuition and Regulations

Tuition rates, all fees, rules and regulations, courses, and course content are subject to revision by the President and the Board of Trustees at any time.

Northeastern University is committed to a policy of equal opportunity for all students, employees, and applicants for employment without regard to race, color, religion, sex, sexual preference, age, national origin, or handicap or veteran status. The University prohibits discrimination in all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance.

Northeastern also prohibits discrimination against any employee regarding upgrading, demotion or transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training. In addition, Northeastern adheres to Affirmative Action guidelines in all recruitment endeavors.

Further, Northeastern will not condone any form of sexual harassment, which is defined as the use of unwelcome sexual advances, requests for favors, and other verbal or physical conduct of a sexual nature, as an explicit or implicit condition of employment, as the basis for employment decisions, or to interfere with an individual's work performance by creating an intimidating, hostile, or offensive work environment.

Inquiries concerning our equal opportunity policies may be referred to the University Title IX Coordinator/Compliance Officer for Section 504 of The Rehabilitation Act of 1973, Affirmative Action Office, 175 Richards Hall, 437-2133. Northeastern's efforts to comply with the Title IX Education Amendments of 1972 and Section 504 of The Rehabilitation Act of 1973 are coordinated by the Dean and Director of Affirmative Action.

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Part One

About Northeastern



About Northeastern

The Philosophy of Education

Northeastern University prides itself on offering "an education that works." The phrase is more than an advertising slogan. It is an expression of the University's commitment to preparing students for the realities of the working world through the practical learning experience of cooperative education.

Northeastern was founded nearly a century ago on the premise that higher education of the best quality should be made available to all who desire it. That founding principle is more alive today than ever before, as cooperative education provides students with an opportunity to help finance their own college education.

Aside from this very real financial benefit, cooperative education has many advantages. First and foremost is the experience students may gain working with professionals and learning about their chosen field of study. Students have a chance to test classroom theories and see if the career path they have chosen is the right one. When Northeastern students graduate, they often can present potential employers with résumés that reflect solid work experience and include meaningful references. And, as many as a third of Northeastern graduates are offered full-time permanent positions with their cooperative education employers upon graduation.

Cooperative education paves the way for an even broader partnership among Northeastern, other colleges and universities, industry, and government. It opens communication with the entire world community and stimulates increased activity through continuing education, research, development, and a myriad of community affairs. It is this growing partnership, beginning with cooperative education, that makes a Northeastern education such a pragmatic and boundless learning experience.



Boston and Northeastern University

Long recognized as America's center of learning, Boston attracts many of the finest minds and talents in the world to its universities each fall. These students and faculty contribute to the vitality of the city and to its international reputation for both time-honored tradition and daring innovation.

In a state where there are more colleges and universities per capita than almost anywhere in the world, one in every five Massachusetts students chooses Northeastern University. Its system of cooperative education adds a special dimension to higher education by taking the learning experience beyond the classroom to private industry and government agencies. Every day, thousands of Northeastern students test classroom theories and enrich co-op employers with creativity and thoughtful inquiry. This is one of the reasons why Northeastern University is not only the largest private university in Massachusetts, but in fact, the largest in the United States.



In turn, many of these co-op employers direct their professionals to Northeastern to earn advanced degrees. These students enroll in Northeastern's University College, which is dedicated to the education of mature, adult students seeking to satisfy their changing professional, cultural, and social needs and interests.

As a large urban university, Northeastern takes seriously its responsibilities to the city of Boston. Its Office of Community Affairs works to insure a healthy relationship with Northeastern's neighbors by cooperating with them on matters of mutual concern. It also helps Boston residents to better utilize the University's human and physical resources through innovative programs. For example, facilities such as Matthews Arena, Barletta Natatorium, and the Eli Student Center are open to many community groups throughout the year for basketball, hockey, swimming, and special events.



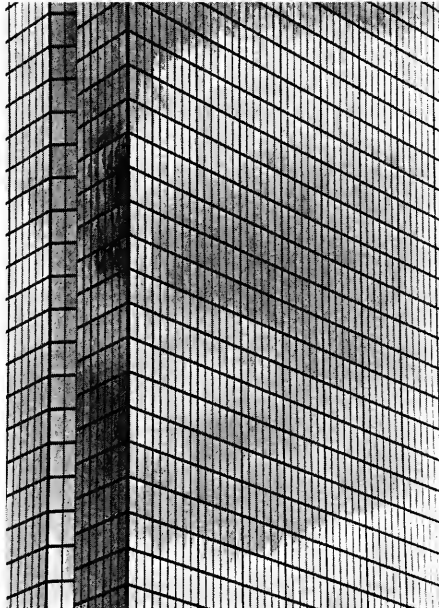


Follow the well-worn bricks of the Freedom Trail from Paul Revere's House to Faneuil Hall, Boston Common, and Beacon Hill. Browse in old bookshops and wander through the galleries on Newbury Street. Buy a designer original for an opening at the symphony—a three-minute walk from campus—or jeans for a sail on the Charles River.

Lose yourself in the shops of Quincy Market, sample the mouth-watering tastes and aromas of the Old North End, indulge in Boston's world-renowned seafood.

Cherish the architecture of the past in the State House, Back Bay, and Beacon Hill. Embrace the boldness of the present in Government Center, Copley Square Plaza, the Prudential Center, Copley Place, and the Christian Science Center.

Discover Boston.



Northeastern students can and do take advantage of the many cultural and intellectual opportunities in Boston.

Northeastern has a compact with its immediate neighbor, the internationally respected Boston Museum of Fine Arts, to provide unlimited free admission to the museum for more than 16,000 full-time undergraduates. The program gives Northeastern students access to the museum's permanent collections and special international exhibitions, as well as a discount on all museum classes, films, concerts, and lectures. In return, Northeastern's music ensembles are available for museum performances and its Division of Fine Arts brings news of museum activities to more than 52,000 members of the University community.

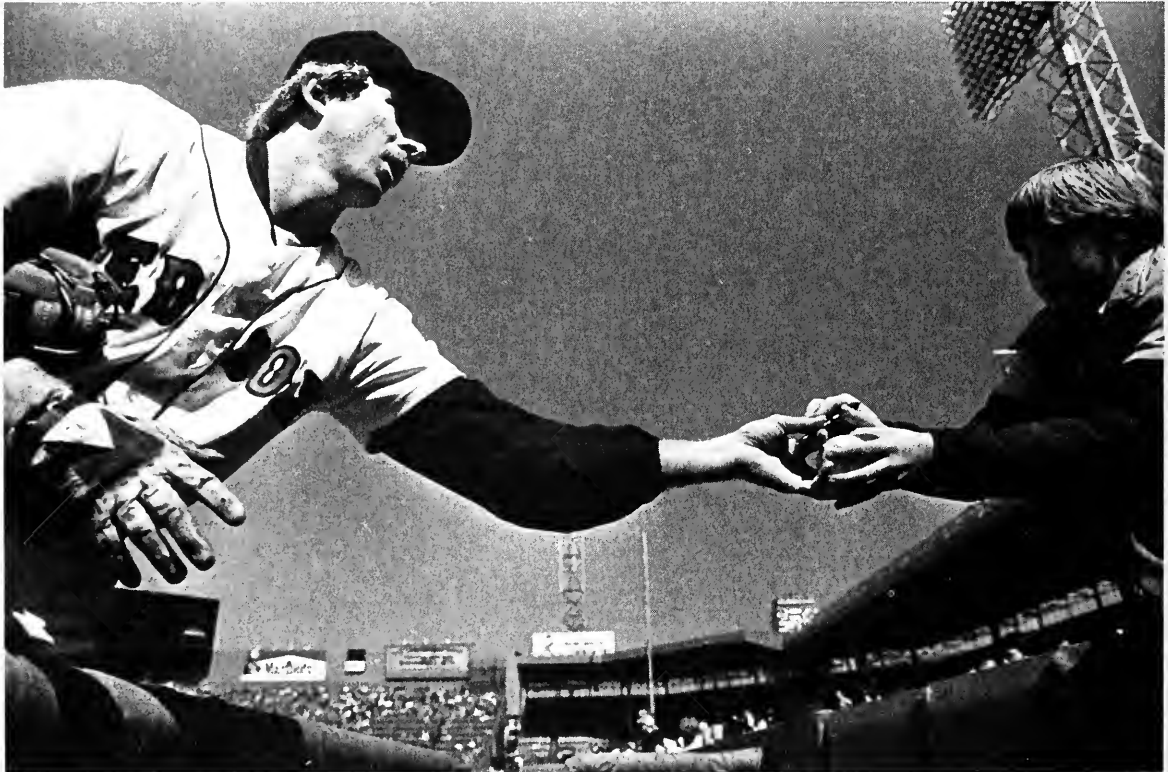
Also within walking distance of Northeastern are Symphony Hall, the Gardner Museum, the New England Conservatory of Music, the Christian Science Center, and the Boston Public Library. Colleges within walking distance include Massachusetts Institute of Technology, Boston University, Simmons College, Emmanuel College, Harvard Medical School, and the Massachusetts College of Art. Also close by are Boston's world-renowned hospitals and their affiliated research facilities.



The beat, the sparkle, the magic of professional theatre is only a subway ride away for Northeastern students. Beckoning to drama, music, and art students, Boston's theatre district lures theatre lovers from all over New England to Broadway-bound shows. It also provides imaginative and talented young artists with opportunities to work alongside professional performers.



Say "Boston" to sports fans and immediately they think of the Red Sox, Celtics, Bruins, and Patriots. Indeed, many Northeastern students join the crowds at Fenway Park, Boston Garden, and Sullivan Stadium in Foxboro each year to cheer on these professional teams. In addition, there are crew races on the Charles River, tennis at Longwood Cricket Club in Brookline, and some of the best skiing in the country on the slopes of Maine, Vermont, and New Hampshire, and even here in Massachusetts.

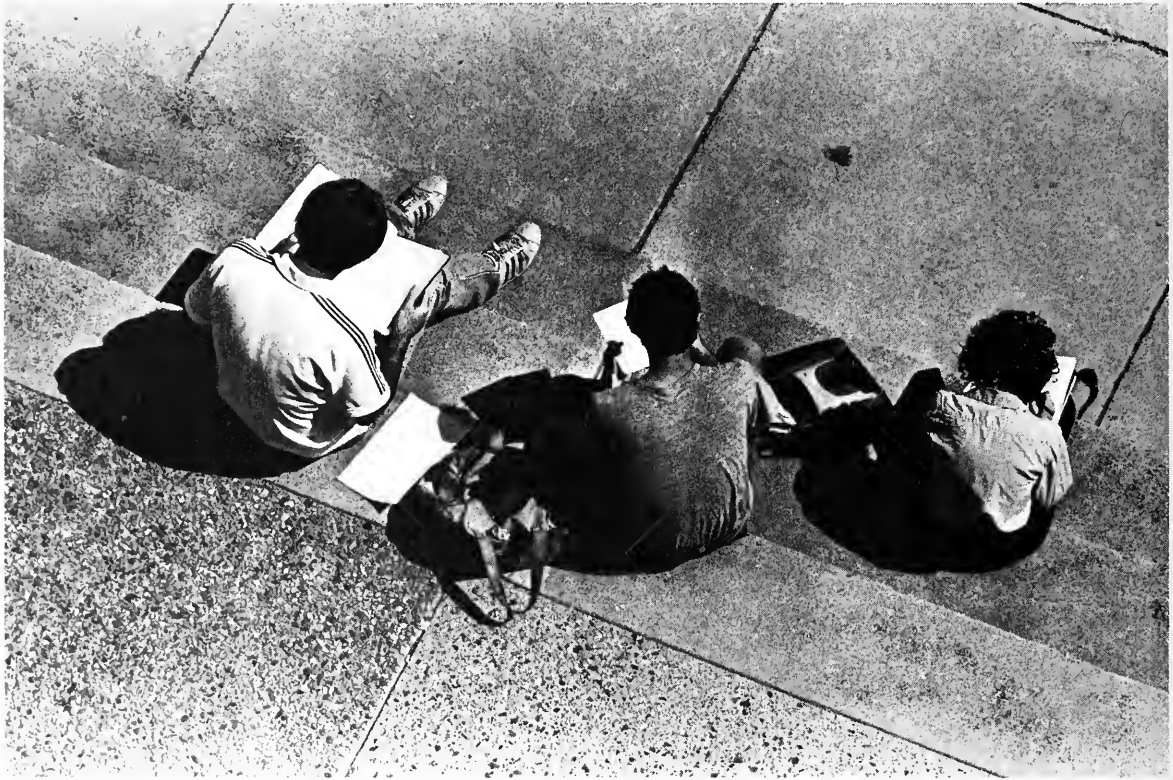


**Boston is where
Northeastern is—and
Northeastern is Boston.**



The Boston Campus

Located on Huntington Avenue in the Back Bay section of Boston, the main campus of Northeastern University occupies approximately fifty acres, including the same land on which the Boston Americans and the Pittsburgh Nationals played the first World Series baseball game in 1903. Today, the University still provides ready access to baseball games; it is located close to the Fenway section and Fenway Park, as well as to cultural landmarks such as Symphony Hall, the Museum of Fine Arts, and the Boston Public Library, among others.



The "front door" to the campus is the Yard, or Quadrangle, facing Huntington Avenue, which is accessible to public transportation. The remaining sides of the Quadrangle are formed by Richards Hall, the Ell Student Center, and the Dodge Library. These three buildings were erected following an architectural design contest held in the early 1930s. Their white brick facades and clean lines form the nucleus of an architectural unit that is maintained throughout much of the campus.



The campus also reflects the fact that Northeastern is an urban university. Many University buildings bear the architectural design that characterizes the buildings surrounding the Quadrangle; other buildings have been acquired over the years and refurbished or recycled for the University's use. Many of these buildings were constructed before Northeastern selected its traditional architectural theme and reflect the more traditional warmth of old Boston.

The campus itself has been planned to provide freedom of movement within the central academic area of classroom and laboratory buildings. During the ten-minute break between classes, students and faculty are able to reach their next classrooms along the walkways and secondary streets that provide ready access to all centrally located buildings. In addition, a network of underground corridors connects many of the buildings on campus, providing routes that are especially convenient during periods of inclement weather.

During the early 1960s, large dormitory facilities were added diagonally across Huntington Avenue from the Quadrangle. In fact, Huntington Avenue currently forms an approximate divider between the education buildings on the south and the dormitories to the north.

Two blocks and a right turn away from the main quadrangle on campus is the oldest indoor ice-hockey arena in the United States and one of the focal points for amateur athletics in the Boston area. Today, the Matthews Arena is primarily devoted to hockey and collegiate sports, but has expanded its university athletic focus to include all men's basketball contests and many women's varsity contests. With more than a million and a half dollars already invested in the Matthews Arena, the building is a jewel to the eye and a credit to the community. As long as Northeastern owns the Matthews Arena, it will continue to meet the needs of the surrounding community as a superior recreational facility.

As the University continues to expand, parking and recreational areas are periodically relocated on the edge of campus as new buildings are added to the central academic area. At present, the University is planning construction around a second and new "front door" on the southwest border of the campus. In that area, a transit line will be relocated on the site of an old railroad line, and the station at Ruggles Street will also coordinate local bus routes and a suburban commuter rail line. This area is also the location of the newest housing facility on campus, West Hall, a ten-story apartment-dormitory.

Tentative plans for the future of the University include the construction of some new buildings as well as upgrading of the old. The new engineering building and a planned new library will not only provide more classrooms and research and study facilities, but will also physically form a quadrangle, the key design element of spatial organization at the University. The quadrangle will be an integral part of the new "front door" to the campus.

A building recently constructed is the architecturally dramatic addition to the Law School. This one-story structure is half below grade, opening into a sunken garden, and has a landscaped plaza on its roof. Over a block long, this plaza is a focal point and gathering spot for the west campus area. Adjacent to this site, a semicircular classroom building has also been recently constructed.

An ongoing renovation program is also providing more accessibility for the handicapped. Existing facilities throughout the University are being updated constantly to provide more efficient classroom, research, and office facilities while still retaining their traditional charm.



A Student's Voice



"Don't sell the steak, sell the sizzle." The "sizzle" was the deciding factor that convinced a seventeen-year-old private school student from New Jersey to come to a large university in the middle of Boston.

I had narrowed my choices down to four universities: Cornell, Rutgers, the University of Maryland, and Northeastern. Knowing that they were all excellent institutions, I needed to find a unique attribute which would distinguish one from the others.

Northeastern stood out for a number of reasons. Attending there would give me the opportunity to be close to my brothers (one at Holy Cross, and the other at UMASS-Amherst). I would be enrolled also in Northeastern's well-respected College of Business Administration. Further, I would be able to make a smooth transition from high school to college football.

However, the "sizzle" which Northeastern provided, and probably the major reason influencing my decision, was the University's widely acclaimed cooperative education program.

Co-op, by design, gives the student practical experience in his or her respective course of study. For me, co-op has more than fulfilled its promise. Through my co-op program I have been able to work in New York with one of the world's largest retailers, the F. W. Woolworth Company. My work there gave me an excellent perspective of the business world. I have worked as an assistant manager-trainee in one of the stores and, during another co-op period, was a systems analyst in the Information Management Department. During my past two co-op periods, I served as a tax assistant in the Tax and Financial Planning Department.

Along with the "on-the-job" experiences, I have had the opportunity to participate in a number of extra-curricular activities at the University. My involvement includes membership in the Marketing Club, the Black Business Students Association, and the Institute of Politics at Northeastern. In addition, I was a four-year member and starter for the N.U. "Huskies" football team. I was fortunate to be a team member during a building program that culminated with a highly successful senior season. My involvement in college football has led to my being drafted by the National Football League and the United States Football League.

Using my marketing concentration, I have been able to build upon the principles and theories I have learned in class as well as on co-op. The past five years have been difficult at times; however, I have realized that anything worthwhile will always prove to be demanding. Northeastern not only offers the student a valuable education, but a priceless work experience, as well, for anyone who wishes to take advantage of the "sizzle."

Dwight A.S.O. Jones

Innovations in Curricula and Personalized Programs

Coming from almost every state in the nation as well as numerous foreign countries, Northeastern faculty members are chosen for their enthusiasm, their scholarship, their teaching expertise, their ability to stimulate intellectual and scientific curiosity, and a genuine desire to work with people.

Northeastern faculty constantly reexamine and reevaluate curricula to keep pace with the changing needs of their students. As a result of this practice, many opportunities that few other institutions can provide are available here. For example, as a student in the College of Arts and Sciences, you may, if qualified, engage in undergraduate study not provided in conventional degree programs by developing an Independent Major with the assistance of a faculty adviser and the counseling services of the Dean's Office. More information on the Independent Major may be found on page 92.

In the College of Engineering, assistance in selecting courses and choosing a major begins in the freshman year. Faculty advisers, each responsible for a small group of freshman students, work under the direction of the staff of the Dean of Students, with the assistance of the Dean's staff in the College of Engineering. Upperclass students are assigned faculty advisers from their major departments. The College of Engineering curricula, under constant review by the departments, are frequently revised to keep current with developments in engineering fields. For example, computer engineering has been added to the Electrical Engineering Program. In addition, a series of courses in Alternate Energy Sources has been introduced into several of the engineering departments.

Lincoln College, a division of the College of Engineering, offers the Bachelor of Engineering Technology (BET) programs, which are distinctly different from the typical engineering curricula. The Engineering Technology programs are designed to emphasize applied, problem-solving, engineering-science education. They provide the opportunity to prepare for what can be a unique, pivotal, and rewarding position on the engineer-technologist-craftsman team. Newly developed engineering technology programs, available through Lincoln College, help meet the demands of the traditional full-time student, employed part-time students, and industry/business as well. One of these programs, the Aerospace Maintenance Engineering Technology program, offers qualified East Coast Aero Technical School or similar technical school graduates the opportunity to transfer into Lincoln College to work toward the Bachelor of Engineering Technology degree in three full-time years while providing co-op work experience. For part-time students seeking career change and advancement, or just furthering their education, the Associate of Science programs in Energy Systems and Telecommunications combine a math-science core with the state-of-the-art technical courses required of leading-edge technology industries. The freshman and sophomore years of the BET program also contain technology course



study experiences related to the curriculum, thus strengthening classroom and laboratory learning. In fact, all programs in the college are offered on the five-year plan.

Cooperative work experience is particularly important for students in the Boston-Bouvé College of Human Development Professions. Opportunities are available for selected students to receive assignments in cooperative school systems, community or government agencies and institutions, hospitals, or libraries. In these settings, students may enjoy unique experiences that greatly enhance self-confidence and professional growth.

Boston-Bouvé College of Human Development Professions and the College of Arts and Sciences offer an undergraduate major in Human Services to students who, in addition to meeting the requirements of their "home" college, take courses in both colleges. In their junior and senior years, Human Services majors must participate in supervised work experiences. For details of the program, see page 72.

Northeastern's College of Nursing program was the first in the country to be offered on a co-op basis. Through affiliation with health-care agencies in the Greater Boston area, students are provided a variety of opportunities to acquire clinical experience beyond that obtained in clinical nursing courses. Students are assigned a faculty adviser to assist in their career development. The College encourages student representation on the majority of its standing committees.

Students in Allied Health Professions may prepare through classroom study and clinical experience to assume a professional role in one of today's health fields.

If you are interested in pursuing a career in the health-care professions, but are undecided as to which profession is right for you, then explore the Open Option. The Open Option program offers freshmen a core of courses designed to provide a basic scientific background required for each of the professional programs in the College of Pharmacy and Allied Health Professions. In the Open Option plan, you may complete the core courses in the first-year curriculum without selecting a profession in which to major and without loss of valuable time. Upon satisfactory completion of the first-year courses, you then select a professional area in which to major.

If you decide to major in Pharmacy, you may select courses in clinical and hospital pharmacy, community pharmacy, or areas that may give

you the opportunity to prepare for a research career in one of the pharmaceutical sciences. The community pharmacy externship and clinical pharmacy clerkship courses help to provide additional practical experience beyond the standard co-op assignments.

Medical laboratory science is an area of health care concerned with the laboratory examination of material necessary for the proper monitoring of health and for the diagnosis and treatment of illness. Working in a variety of specialized fields, such as microbiology, blood banking, hematology, clinical chemistry, or as a generalist in all these areas, medical laboratory technicians and technologists are respected and important health professionals. Northeastern's program in Medical Laboratory Science offers you the opportunity to prepare for laboratory duties at several levels by combining internship with co-op positions or part-time jobs during your baccalaureate degree program. Upon graduation, you may wish to take national certification examinations or pursue a graduate study program.

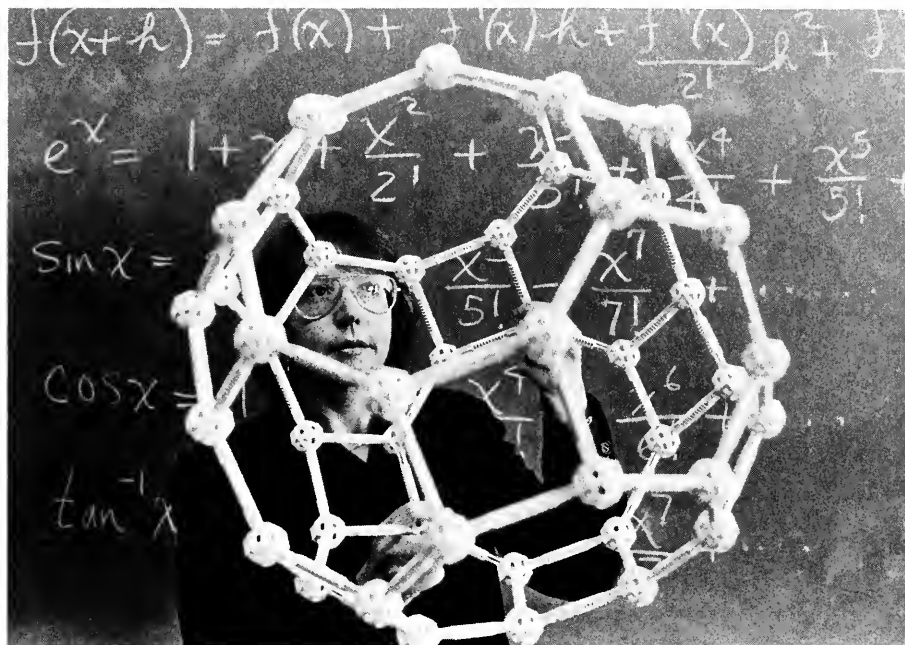
The Health Record Administration program offers you the opportunity to prepare for a variety of positions in the area of documentation of health care.

The Respiratory Therapy program helps to prepare students for careers as life-support specialists. The curriculum leads to a Bachelor of Science degree in Respiratory Therapy. Students may develop a concentration in cardiovascular perfusion technology, neonatology, or intensive care during the junior and senior years of the program. Certificate programs in Respiratory Therapy and Cardiovascular Perfusion Technology are offered to professionals with a baccalaureate or master's degree who desire to enter a new career. Upon successful completion of the baccalaureate or certificate curriculum, the graduate is eligible for the examinations given by the American Board for Respiratory Care or the American Board for Cardiovascular Perfusion.

A Bachelor of Science degree program in Toxicology is also offered by the College of Pharmacy and Allied Health Professions. This program emphasizes the areas of environmental principles in toxicology, thereby helping to educate students for advanced studies and employment opportunities in clinical, government, and industrial settings as they relate to medical and environmental problems.

The Cooperative Plan and a combination of applied and theoretical courses contribute to the academic program at the College of Criminal Justice. Graduates have found careers in law enforcement, private security, criminalistics, corrections, and rehabilitation and social services, as well as in many other areas of the criminal justice system. Because of the academic nature of the program, many graduates have enrolled in law school or undertaken graduate study in criminology, public affairs, and social work.

It has been said that "the most essential thing in the work of education is that sympathetic touch of life on life. It is by that fine process that personality is developed, matured, and enriched. . . ." One reason for the success of the Cooperative Plan at Northeastern University is that "touch of life on life," which is made possible by the close association between the more than 800 scholars on the faculty of the Basic Colleges and their students. When you enter Northeastern, you are assigned an academic adviser who works with you during your freshman year on a wide variety of matters concerning your personal and academic development. Advisers are also available for academic counseling throughout your upperclass years. Obviously, it is the student's responsibility to take advantage of these opportunities.



Research

Research, whether performed in the laboratory, library, or in the field, is vital to a college education. It stimulates all participants and ensures a thriving academic atmosphere. Through research, faculty members as well as students stay abreast of the most recent developments in their particular fields. Faculty who disseminate this knowledge, through publishing, speaking, and teaching, help assure a university education of the first order.

At Northeastern, research and scholarly endeavors are taken very seriously and are actively encouraged. Each year, the faculty receive funding for an ever-increasing number of research projects. Sponsorship comes from a variety of sources. Federal agencies, private industry and foundations, and the University itself all contribute to Northeastern's growing research emphasis.

While much of this research is carried out by the faculty members, their graduate students, and post-doctoral research associates, ample opportunities also exist for undergraduate students. Research participation can be included as part of regular academic programs, as specially designed independent studies, or through cooperative work assignments. Research activities are encouraged, and are limited only by the student's own motivation and curiosity.

Northeastern University has numerous distinguished faculty members, many of whom have received prestigious awards, including Sloan Scholarships, Guggenheim Fellowships, and National Institutes of Health Research Career Awards. Faculty members lecture the world over—from just across the Charles River in Cambridge, Massachusetts, to across the Pacific Ocean in Sydney, Australia.

Additionally, many faculty serve as United States government consultants and participate on a variety of national and international committees. But, because Northeastern considers education its primary mission, students will always find an enthusiastic and accessible faculty to answer questions, solve problems, and stimulate enquiring minds.

Current research spans almost every academic and professional field and is not limited to laboratory investigations or the "hard" sciences. Every department of every college at Northeastern carries out some basic or applied research projects.

A brief summary of some of the topics presently under investigation by the faculty and students follows. Perhaps something here will spark hidden interests that students never realized they had. Students desiring to explore the opportunities for research participation should inquire at the appropriate departmental offices.

In the College of Arts and Sciences research projects reflect the diversity of its eighteen departments. Research in the humanities and the natural and social sciences includes studies in 19th-century Boston architecture, the Off Off Broadway theatre, biochemistry, quantum field theory, and infrared spectroscopy. As part of the College's interdisciplinary interest in marine sciences, the Marine Science and Maritime Studies Center has been established. At its Nahant field station and laboratory, faculty and graduate students carry on research in marine chemistry, biology, and botany.

Research in the College of Engineering encompasses some of today's most important technological subjects. Robotics, telecommunications, signal processing, and the theoretical aspects of computer engineering graphics are some of the major fields of interest within the College. But not all studies are high technology oriented. Indeed, some faculty pursue projects dealing with the electrical properties of human blood vessels, while others investigate the mechanical characteristics of cement. These seemingly diverse research areas do have one thing in common, however: they deal with the improvement of our quality of life.

Northeastern University's new College of Computer Science represents one of today's most active technological fields. The research interests of the computer science faculty span network control algorithms, numerical applications interactive graphics development, design of data base systems, artificial intelligence, and the software aspects of VLSI design systems.

The College of Criminal Justice is one of the few institutions of its kind in the United States to study crime and law in an interdisciplinary fashion. Lawyers, social and forensic scientists, and system specialists collaborate with Criminal Justice faculty in research activities focusing on both crime detection and prevention. Some research directions currently pursued by faculty include industrial espionage, private security systems, and contemporary terrorism.

The School of Law's research activities concentrate on the legal system from perspectives encompassing the past, present, and future. Topics include a historical look at the Securities and Exchange Commission, a present view of new civil procedures, and the ramifications of a landmark court case on the mental health profession. Law school curricula also come under investigative scrutiny.

The nature of research in Boston-Bouvé College of Human Development Professions is broad in range and diverse in approach. Changes in human development and the roles of the teacher and clinician in facilitating such changes are topics of lively interest. Some of the current research interests of the College include the communication abilities of normal and hearing-impaired individuals, the role of exercise in cardiovascular health and disease, the relationship between age change and the development of motor and cognitive skills in children, the evaluation of clinical practice in physical therapy and educational practices in the schools, and the examination of barriers to the employment of the disabled in leisure services.

The College of Nursing, through its research activities, addresses some of the important problems currently facing the entire nursing profession. One answer to "burnout" may be found in the College's new school nurse practitioner program. Assessments of this new direction in nursing and other employment possibilities and problems are areas in which the faculty are directing their research efforts.

Research objectives in the College of Pharmacy and Allied Health Professions have important ramifications for the nation's health. Studies include new ways to analyze antidepressant and anticonvulsant drugs, improving methods to diagnose bladder cancer, and clinical applications in respiratory therapy. The National Institutes of Health, the Office of Naval Research, and the Union Carbide Company are among the sponsors of the College's work.

Research in the College of Business Administration is partitioned between the theoretical and practical aspects of management, human resources, and marketing. New approaches in corporate practice and academic theory are being realized through conclusions reached by a faculty examining such topics as high technology management, small business entrepreneurship, and foreign investment in developing countries. Other studies concentrate on transportation problems in the U.S., government regulation in industry, and technological forecasting in the high technology industry.

Northeastern University is its own research subject for the Cooperative Education Research Center. Through an annual census and other statistical surveys, data on cooperative education are compiled. Because Northeastern University is a major force in cooperative education in this country, it seems only appropriate that this information clearinghouse and research facility should be located here. Conclusions reached in this Center have implications for cooperative education's impact on college costs, career opportunities, and life satisfaction.

Northeastern also has several interdisciplinary centers and institutes which do not grant degrees, but they perform a variety of interesting and relevant research. The Barnett Institute of Chemical Analysis and Materials Science has as its goal basic research in the fields of analytical chemistry and material science and its application to problems of social relevance. The Institute has developed an international reputation in the fields of chromatography, mass spectrometry, amorphous metals, and solar-energy storage devices. The Center for Electron Microscopy is a self-contained research unit that utilizes the latest scientific equipment for training and research in cellular and subcellular structures. The Center for Applied Social Research is a University-wide institute that deals with issues of public policy and social research. Projects are presently under way in the fields of criminal justice, public safety, mental health, social welfare, and education.

Support services for research are provided by the University's Office of Sponsored Programs, the Academic Computer Services, and the Division of Laboratory Animal Medicine.

The Cooperative Plan

The Cooperative Plan brings relevance to your college education. By offering a schedule that alternates classwork and off-campus experiences, Northeastern helps you to realize your potential and develop personal maturity. The process itself—as you compare classroom theory with its realistic application—enlivens classwork. Upon graduation you will have not only a degree, but also up to two years of valuable experience to offer a potential full-time employer. In addition, the money you earn on cooperative assignments can help to defray the cost of tuition, books, and incidental expenses.

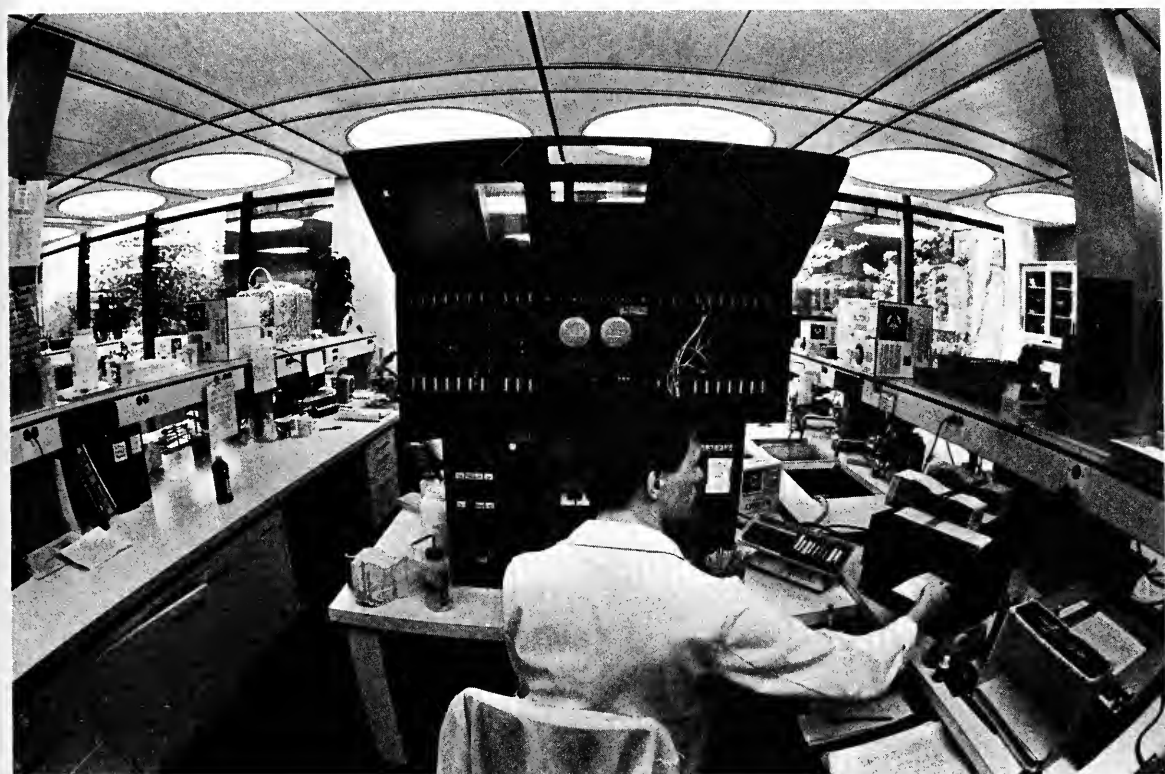
You will be assigned a faculty coordinator—counselor team responsible for all phases of your cooperative program and who will assist you in deriving greater value from your education at Northeastern. Personal interviews, in which your academic progress and evaluations of your previous work experiences are reviewed, provide the basis for referral to specific opportunities that could help you realize your career objectives. The faculty and professional staff of the Department of Cooperative Education are specialists who keep abreast of activities in specific areas in order to provide counseling on opportunities and trends in these areas. In general, starting assignments tend to be of a routine nature, to be followed by increasingly professional applications as your education and abilities increase. Subject to economic conditions and your willingness to consider alternative opportunities, you can expect to work on responsible and challenging assignments during your participation in the program.

At some point in your program, you may wish to participate in an activity other than paid employment during a cooperative period. You may wish to travel abroad, spending time in one or several foreign countries learning about the customs, the culture, and the people. You may wish to volunteer your services to your local hospital or spend some time on an Indian reservation in the Southwest. Or you may wish to take specialized courses at another institution. Time to engage in these and similar activities can be arranged with your coordinator as a part of your Cooperative Education Program.

Most cooperative curricula leading to the baccalaureate degree require five years. Programs consist of a freshman year of three consecutive quarters of full-time study followed by four upperclass years in which you alternate periods of classroom attendance at Northeastern with periods on cooperative assignment. Some programs vary slightly from this pattern to meet professional requirements in their particular fields.

Participation in the Cooperative Plan is a requirement for all students in the Basic Colleges except those enrolled in the College of Arts and Sciences. Although the majority of students in the College of Arts and Sciences choose to take advantage of the Cooperative Plan, the College offers its students the opportunity to select a “full-time” program in which eight quarters of upperclass study may be completed in three years.

Further details on the cooperative program are available in a booklet entitled *Co-opportunities*, which the Department of Admissions will be happy to send you on request.



Alumni Association

More than 93,000 alumni are united within the Alumni Association, created to establish a mutually beneficial relationship between Northeastern and its graduates. The Association is governed by an Executive Committee elected from the alumni community. Membership in the Association is automatic upon graduation.

The Association is headquartered in the Office of Alumni Relations in 125 Richards Hall; telephone 617-437-3186. The official records and addresses of alumni are maintained in the Office of Alumni Records; telephone 617-437-2792.

Activities of the Association include the Homecoming celebration, presentation of the Outstanding Alumni Awards, and the annual presentation of Professional Promise Awards to outstanding seniors in each of the Colleges. Alumni officers, in conjunction with the Office of Alumni Relations, have established a series of enrichment/education programs to meet the contemporary vocational and avocational needs of Northeastern's graduates. The Alumni Association has also initiated a successful group travel program to provide the alumni of Northeastern with interesting and economical opportunities for foreign travel, and sponsors group term life insurance for members of the alumni community. Notice of all activities is provided in the *Northeastern Alumni Magazine* and in special publications.

Regional alumni clubs have been established from coast to coast. All alumni are eligible to become members of these organizations. The clubs meet periodically with varied programs, often in conjunction with professional and athletic events, faculty visits, and service projects. Additionally, alumni class organizations conduct reunions for their respective classes every five years, and Golden Graduates' Day, for senior alumni, has become an annual event.

The Association sponsors and assists constituent organizations that focus on common professional and avocational interests and college affiliations. These groups have their own officers and conduct various programs throughout the year.

Regional alumni clubs provide a valuable service to the University by sponsoring admissions conferences for high school students and the parents of students who are interested in attending college. In addition, alumni volunteers in many metropolitan areas across the nation represent the Admissions Office on a continuing basis at high schools and community colleges.

Part Two

Academic Programs



Academic Programs

Quarter-Hour Credits

Northeastern University operates on a quarter-system calendar. All courses are evaluated in terms of quarter-hour credit. A quarter-hour credit is equal to three-fourths of a semester-hour credit.

Classes at Northeastern are scheduled in different modules.

In assessing quarter-hour weights for courses, the following statement applies.

One quarter hour of credit is equal to fifty minutes of instruction per week, plus two hours of preparation.

Undergraduate Majors

College of Arts and Sciences

Bachelor of Arts or Bachelor of Science

African-American Studies

Art

Biology

Chemistry

Economics

English

Geology

History

* Human Services

Journalism

Linguistics

Mathematics

Modern Languages (French, German, Italian, Russian, Spanish)

Music Literature

Philosophy

Physics

Political Science (including a concentration in Public Administration**)

Psychology

Sociology-Anthropology

Speech-Communication

Theatre and Dance

Boston-Bouvé College of Human

Development Professions

Bachelor of Science in Education

Early Childhood

Elementary Education with a minor in Special Education with emphases in:

Humanities

Reading-Language

Social Sciences

Human Services

Physical Education

School and Community Health Education

Secondary Education Majors:

Biology

English

General Science

Mathematics

Social Studies

Speech and Hearing

Bachelor of Science in Physical Therapy

Bachelor of Science in Recreation and Leisure Studies

* Bachelor of Arts only

** Bachelor of Science only

College of Business Administration

Bachelor of Science in Business Administration

- Accounting
- Entrepreneurship and New Venture Management
- Finance and Insurance
- Human Resources Management
- International Business Administration
- Management
- Marketing
- Transportation and Physical Distribution Management

College of Computer Science

Bachelor of Science in Computer Science

College of Criminal Justice

Bachelor of Science in Criminal Justice

College of Engineering

Bachelor of Science

- Chemical Engineering
- * Civil Engineering (Environmental option available)
- * Electrical Engineering
(Computer Engineering and Power Systems options available)
- Industrial Engineering
- * Mechanical Engineering
- Unspecified-general engineering program

Lincoln College

Bachelor of Engineering Technology

(Five-Year Day Cooperative Program)

- Computer Technology
- Electrical Engineering Technology
- Mechanical Engineering Technology
- Transfer, Day Cooperative Program
- Aerospace Maintenance Engineering Technology

College of Nursing

Bachelor of Science in Nursing

A Transfer full-time day program for Registered Nurses who want to earn their Bachelor of Science in Nursing

College of Pharmacy and Allied Health Professions

Bachelor of Science

- Health Record Administration
- Medical Laboratory Science
- Pharmacy
- Respiratory Therapy
- Toxicology

Associate in Science

- Respiratory Therapy

Open-Option: Common freshman-year health track available for undeclared majors

University College

Alternative Freshman-Year Program (Self-Paced Program)

Degree requirements: 172–222 quarter hours (requirements vary with major).

* Also offered as part-time evening program

College of Arts and Sciences

Richard Astro, Ph.D., *Dean*

J. Edward Neighbor, Ph.D., *Associate Dean and Director of Graduate School*

Timothy P. Perkins, M.A., *Assistant Dean (Special Projects)*

Ruthann T. Stiles, M.A., *Assistant Dean (Financial Affairs)*

Deborah H. Stein, M.Ed., *Assistant Dean (Graduate and Undergraduate Student Affairs)*

Mary Mello, M.A., *Assistant to the Dean (Undergraduate Student Affairs)*

Gail F. Leclerc, M.Ed., *Assistant to the Dean (Graduate Student Affairs)*

Program Aims

Studies in a broad distribution of disciplines in Arts and Sciences are universally regarded as the core of higher education. For this reason, nearly all students in the University—no matter what disciplines they choose for their career training—devote a substantial portion of their studies to the arts and sciences.

The College of Arts and Sciences comprises a wide variety of disciplines spanning an enormous range of human knowledge and activity. These disciplines are grouped informally into divisions as follows: 1) Fine Arts, 2) Humanities, 3) Natural Sciences, including Mathematics, and 4) Social Sciences. The College as a whole emphasizes the general education of students; within each division, the disciplines tend to offer a common preprofessional orientation and emphasis.

In addition, the College offers a large number of interdisciplinary programs as well as extradisciplinary opportunities for the enrichment of learning. These are grouped into a division of Special Programs. The division includes exchange programs with other institutions, both nationally and internationally, for employment and/or study; programs for extended studies in field settings at sea and abroad; and cultural programs involving affiliations with professional performing arts organizations—to name a few. At present the division comprises over thirty different special programs of various types.

Graduates of the College find they are prepared for a multitude of employment opportunities in all walks of life. Many choose to accept employment directly, following receipt of the Bachelor's degree. Many others choose to continue their training by going on to graduate-level studies in business, law, or medicine, for example. Others decide to pursue advanced study in an area closely related to their undergraduate field.

Four- and Five-Year Programs In all disciplines, students of the College have the option of choosing a four-year full-time program or the five-year Cooperative Plan. The five-year plan offers opportunities for regular "real world" employment and income in an area often related to the chosen area of academic work. All students are normally eligible to participate in the Cooperative Plan when they achieve sophomore status.

Major Programs

Entering students are invited to express a "major preference" for one of the disciplines, and this, together with the core requirements of the College, determines the course of studies in the first and second years. There is considerable flexibility, however, and students often change their preferences during this period. Formal certification of the major choice normally takes place at the beginning of the third year, when the transition to the "upper division" of the College occurs.

Students entering the lower division of the College may wish to petition later for transfer to the upper division of the College of Business or the College of Computer Science. Arts and Sciences freshmen with this intention should indicate "Business" or "Computer Science" as the initial major preference.

Students in the College may earn a Bachelor of Arts degree in all major programs or a Bachelor of Science degree in most major programs.

Honors Program

The Honors Program of the College exists to meet the needs of highly motivated and especially successful students. It is an optional program providing an assortment of special courses and activities for students who are invited to participate.

The Honors Curriculum consists of 1) some of the courses required for all students, such as English and Mathematics, 2) interdisciplinary and survey seminars as honors alternatives for elective courses, 3) one-credit-hour "mini-courses" on a wide variety of subjects, and 4) the opportunity for students to undertake a special Honors Project under the supervision of a faculty adviser in the junior and senior years.

The Honors Program is designed to be consistent with participation in the other programs of the College, including a major in any of the departments. The Honors Program makes some extra demands, but because the courses are limited in size, aim for greater than usual breadth and depth of inquiry, and promote close interaction between faculty and students, the program offers especially stimulating educational opportunities.

A student's participation in any honors course is noted clearly on his or her transcript—something that may be useful when students apply for employment or admission to graduate school.

Students who participate in the Honors Program can be eligible for Honors Program Distinction at graduation. The requirement for this notation on the student's transcript is that a student completes at least twenty-four quarter hours of course work in the program, including at least one survey seminar and not more than eight quarter hours' credit for a junior/senior honors project.

Since the fall of 1983, eligible students from other colleges in the University have been invited to participate in the Honors Program courses and activities.

The Honors Program also sponsors, through the efforts of an advisory council of students in the program and a faculty honors committee, a number of cultural and social events, as well as a speaker series. Some of these events are made available by the program for the benefit of the entire University community. Others afford honors students alone the opportunity to associate with peers in circumstances less formal than the classroom, where they can get better acquainted and participate in the casual discussions that make up such an important part of a university education.

Advising and Placement

Upon acceptance to the College, students are placed into freshmen and sophomore courses designed to suit their abilities, needs, and prospective major affiliations. The placement process involves close consultation between students and faculty advisers from the major disciplines.

The particular studies advised for freshmen fall into several placement categories, as follows: 1) honors, 2) regular, 3) regular with modification, and 4) special. The latter two categories may require that students undertake studies in skill development to improve their chances of success in college. These placements are determined by faculty, subject to review by consultation during Orientation Week, before classes start in the fall quarter. Continued monitoring and mentoring by faculty and/or staff advisers aid students appropriately in preparing to enter their major fields of study.

As in the freshman year, faculty guidance is available to upper-class students for maintaining satisfactory academic standing and gaining entry by petition to a major field of specialization. After the major choice is certified, students are formally affiliated with their department, its faculty, and other students in the same major field.

The Arts and Sciences Dean's Office, located in 403 Meserve Hall, is the central administrative office for all students majoring in Arts and Sciences programs. In addition to the academic counselors located in the various departments, the Dean's Office staff is available to all students for academic assistance. The counselors in the Dean's Office work closely with departmental advisers to help the student work out a program of study and take care of any problems that may arise relating to administrative procedures. The Dean's Office is open from 8:30 to 4:30, Monday through Friday, during the fall, winter and spring quarters, and from 8:00 to 5:30, Monday through Thursday, during the summer. Students are encouraged to make appointments with counselors at any of these times. The phone number is 437-3980.

Student Services

Cahners Hall Math/Writing Center All mathematics and English remedial courses are taught in classrooms in Cahners Hall, the Math/Writing Center. The facility includes a Writing Center and a Math Workshop, where students may receive individual tutoring. In addition, Cahners Hall has five computer terminals and a printer which are used to teach problem-solving strategies in the remedial math courses.

Preprofessional Advising The Pre-Health Professions Advisory Committee, a University-wide group, offers preprofessional counseling for students interested in a career in medicine, dentistry, or related professional medical fields. The Committee members are available to discuss the various medical fields, minimum admissions requirements, and application process.

For students preparing for a career in law, there are also a number of faculty members who can serve as advisers and resource personnel on related curricular and admissions questions.

In addition, the Department of Career Development and Placement provides information and advice on procedures for admission, preparation of applications, and the scheduling of appropriate admissions tests. For further information regarding the above, students should contact Ms. Gail Leclerc in the Arts and Sciences Dean's Office.

Program Descriptions and Regulations The following pages briefly describe each major discipline in the College of Arts and Sciences. Within each division of the College, the disciplines are listed in alphabetical order. Summaries of the divisions can be found on the following pages: Fine Arts, page 35; Humanities, page 40; Natural Sciences and Mathematics, page 51; Social Sciences, page 66.

A summary of the Special Programs in the College can be found on page 86. Following this is a brief description of each of these programs, listed in alphabetical order.

Finally, a summary of general College conduct can be found on page 285. A more complete account of the regulations can be obtained from the Dean's Office of Arts and Sciences.

A complete listing of individual courses offered by the College, including a short description of contents for each course, is given in the *Basic Day Colleges Course Descriptions and Curriculum Guide*, obtainable from the Registrar's Office.

Fine Arts

To try to define the boundaries of an academic discipline is to invite controversy. This is nowhere more true than in the field of the arts. However, one can say that the term “arts,” used without qualification (as in “Arts and Sciences”), refers to such disciplines as languages, literature, and philosophy that are presumed to develop general intellectual ability and judgment and provide information of general cultural concern.

Education in the arts is thus distinguishable from education in the sciences—which emphasizes knowledge of objective facts and laws—and especially from narrowly practical training, as for a particular profession such as law or medicine.

The term “Fine Arts” refers specifically to those disciplines concerned primarily with works produced or intended for beauty rather than mere utility. Thus, the term includes (but is not limited to) activities such as sculpture, painting and drawing, and, often, architecture, drama, music, and the dance.

In the College of Arts and Sciences, the major disciplines comprising the Fine Arts division are as follows:

Art and Architecture below
 Theatre and Dance page 37
 Music page 38



Art and Architecture

Peter Serenyi, Ph.D., *Professor and Chairman*

Professor

Robert L. Wells, M.A., M.F.A.

Associate Professors

Samuel S. Bishop, M.A., M.F.A.

Wheaton A. Holden, Ph.D.

Assistant Professor

T. Neal Rantoul, M.F.A.

Professional Preparation

Aims The visual arts, humankind's oldest form of artistic expression, offer a deeper understanding of man and the cultural forces that have affected him historically. Moreover, as visual communication becomes more widespread in the contemporary world, the use and understanding of visual language must be seen as a necessary part of the educational process.

In view of this, the aim of the Department is threefold: (1) to introduce art and architecture both as history and as creative activity in the context of a broad liberal arts education; (2) to offer a more focused study of the visual arts through a critical examination of both the language and content of art and architecture in the context of a particular historical period, or through the hands-on experience of a studio setting; and (3) to provide an opportunity for a solid academic foundation to those who wish to pursue a career in art and architecture, or related fields.

One of the main resources of the Department is Boston itself, whose architecture spans three hundred years, whose museums are world famous, whose galleries and cinemas offer the latest in their respective areas, and whose public library is one of the best of its kind. Learning to use these resources systematically is an all-embracing aim of the Department.

Description of the Major The Department offers three concentrations within the major: (1) history of art and architecture, (2) studio art, and (3) architecture. Courses in the history of art and architecture cover the major periods of the Western World from Ancient to Modern, with a focus on nineteenth- and twentieth-century Europe and America.

The studio concentration includes painting, drawing, printmaking, architecture, film, and photography. Studio courses are complemented by courses offered in the theory and criticism of these art forms. The best work created in the studio courses is exhibited in the annual student show at the University Art Gallery.

The architecture concentration consists of courses in the history and theory of architecture and architectural design. Except for Introduction to Architectural Design, all design courses are to be taken at the Boston Architectural Center at 320 Newbury Street, Boston.

A View of the Major The Department offers both a Bachelor of Arts degree and a Bachelor of Science degree program. In both programs the requirements for the major are the two-part survey course in art history, twelve electives in art and/or architecture, plus one elective each in music and philosophy and two in history. With prior approval, art courses not offered by the Department may be taken in one of the neighboring art schools or universities.

Majors may pursue either a four-year full-time program or a five-year cooperative plan of study. Transfer from one to the other is possible, and registration in either can be reversed. Cooperative work assignments include positions in museums, libraries, historical collections, archives, and the Northeastern University Art Gallery.

A View of the Minor The Department offers a minor program for students majoring in other fields of study. The program consists of a general minor and the following four concentrations: history of painting, architecture, film and photography, and studio art. The number of courses required for the minor does not exceed seven. Students interested in the minor program should consult the Department.

Special Programs

See Center for Asian Studies, Boston Architectural Center Affiliation, Division of Fine Arts, Humanities Center, Independent Major, Irish Studies, Media Studies Minor, Urban Studies Minor, International Co-op, and New England Conservatory affiliation.

Theatre and Dance

Sergei P. Tschernisch, M.F.A., *Professor and Acting Chairman*

Professor

Eugene J. Blackman, M.A.

Mort S. Kaplan, M.A.

Associate Professor

Jerrold A. Phillips, Ph.D.

Assistant Professors

Janet L. Bobcean, M.F.A.

Michael Brill, M.F.A.

James J. Moran, M.F.A.

Ingrid H. Sonnichsen, M.A.

Professional Preparation



Aims Theatre, one of the most ancient of all art forms, is still a moving force in our society because it uniquely involves both the performer and the spectator to a degree unmatched by most creative and communicative arts.

At Northeastern, students in the Theatre and Dance Department have the opportunity to enroll in a program of study that provides a balance between theory/history/literature courses and studio rehearsal and performance work. The curricula provide the student with the opportunity to obtain the background for advanced study on a graduate level or for a career in the professional theatre.

Description of the Major The undergraduate theatre major will be introduced to the total theatre experience. A diverse core program, consisting of twelve courses, is designed to develop understanding of the essentials necessary as a foundation upon which to elect one of the following seven concentrations: Acting, Scenic Design, Costume Design, Lighting Design, Literature/Criticism, Dance, or Generalist Concentration.

The classroom and stages are viewed as laboratories where theory is tested in rehearsal and performance. To enrich the means of performance, the facilities and faculty of other art departments—Music and Art and Architecture—are drawn upon. Theatre majors are encouraged to express individual creative and interpretative impulses, and with the support of a faculty adviser are often able to perform a variety of projects of their own initiation in areas of acting, directing, playwriting, design, or performance art.

A View of the Major The difference between the B.A. degree and the B.S. degree is one of flexibility and concentration. The B.S. degree allows the substitution of specialized field courses for certain of the College's general and language requirements.

Besides completing the required courses offered by the College of Arts and Sciences toward a degree program, and before focusing on further course work within any particular concentration, all majors in all concentrations except Dance must complete forty-eight quarter hours of the departmental core, which includes such courses as Introduction to Acting, Concepts of Directing, Stagecraft, Introduction to Theatre Design, and Introduction to Art, Drama, and Music. Theatre majors with a Dance Concentration, before focusing on further course work within this Concentration, must complete a core of forty-seven quarter hours. In

addition to various technique classes in Ballet, Jazz Dance, Modern Dance, and Choreography, the following are just some of the courses in the core of the Dance Concentration: Dance in the Twentieth Century, Anatomy/Physiology, Kinesiology, and Dance in Cultural Perspective.

The theatre represents the major public laboratory to the major, a place where theory is put into practice. All majors are expected to work in production each quarter in residence and fulfill a variety of crew assignments in construction, painting, sound, lighting, costuming, and box office work, as well as crew assignments for the running of a show. Whenever possible, majors are expected to serve as stage managers and assistant stage managers. Appearing in a production is not a substitute for crew work and, when reasonably possible, all those concentrating in a performance aspect should also participate in crew activities.

It is also recommended that Theatre majors take a Physical Education *skill* course during each of the quarters in residence. The following courses, when available, are recommended: Modern Dance, Ballet, Jazz Dance, Tumbling, Gymnastics, Fencing, and Physical Conditioning.

Description of the Minor Students majoring in other departments may choose a minor in Theatre to complement their academic majors or to assist them in developing career goals by taking eight courses (thirty-two quarter hours). Closely supervised by a departmental faculty adviser, students may follow programs of study that offer a generalized or a specialized program. Specialized areas are in Acting, Scenic Design, Costume Design, Lighting Design, and Literature and Criticism.

Accreditation Basic course work offered by this department adheres to the suggested minimum requirements for a Theatre degree as put forth by the American Theatre Association and enables the diligent student to prepare for the Graduate Placement Examination in Theatre.

Special Programs

See The Division of Fine Arts, Humanities Center, Sports and Leisure Studies, Film Studies, Irish Studies, Asian Studies, American Sign Language, and International Co-op.

Music

Joshua R. Jacobson, D.M.A., *Chairman*

Professor

Roland L. Nadeau, M.M.

Associate Professors

Reginald Haché, A.D.

David Sonnenschein, D.M.A.

Assistant Professors

Julia A. Griffin, Ph.D.

Matthew McGarrell, M.M.

Dennis H. Miller, D.M.A.

Instructor

Linda C. Ott, M.M.

Lecturers

Edmond J. Moussally, M.M.

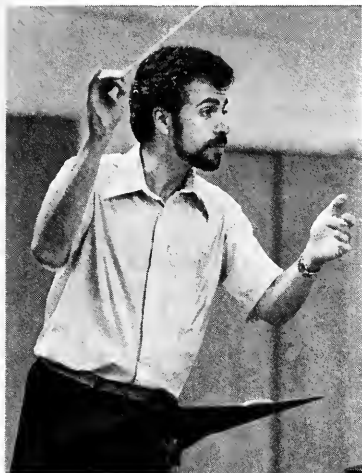
Karen L. Pokross, Ed.M.

Anne C. Ewers, M.M.

Steven Mackey, M.A.

Armand Qualliotine, M.A.

Professional Preparation



Aims Music speaks directly to the soul. The experience of the masterworks of the musical art is one of the cornerstones of a humanistic education.

The primary aim of the Department of Music is to foster the aesthetic appreciation of music by giving students the opportunity to gain the knowledge and skills necessary to understand and intelligently evaluate a musical composition.

Courses are offered in the areas of general appreciation, music theory, the history of music (both Western and non-Western), applied music lessons, and aspects of the music industry. Performing ensembles directed by full-time music faculty provide students the opportunity to experience first-hand the music which they have studied in the classroom. Furthermore, an extensive concert series offers a varied program of performances on campus by faculty, students, and guest artists.

Description of the Major The Music Department offers a variety of options for the prospective musician. While the core of the program is the study of Music Literature, students can concentrate in a variety of sub-specialties such as World Music, African-American Music, Music and Technology, the Music Industry, Music Therapy, and Performance.

The Music Literature major is divided into two areas. In the first area, the historical development of the great music literature of Western civilization is traced. The second area is comprised of a series of theory courses encompassing ear-training, keyboard skills, and analytic techniques. Students have use of Northeastern's modern facilities, which include a piano laboratory and a fully-equipped listening center.

A View of the Major For the B.A. degree program in music, students must complete four courses in music theory, five courses in music history, one course in keyboard proficiency, and two courses in musical analysis. Students must take a minimum of three electives in music, as well as three courses in Western Civilization, Art, and Drama. The remainder of the student's course work is selected from a broad base of electives in the College Core Curriculum.

A View of the Minor The Department offers a minor in Music for students majoring in other fields of study. The program consists of three courses in music theory, two courses in music history, one course in keyboard proficiency, and one elective in music.

Special Programs

See Boston Lyric Opera, Division of Fine Arts, Humanities Center, Independent Major, League of Composers—International Society for Contemporary Music, and International Co-op.

Humanities

The Humanities are those disciplines concerned with human beings and their cultures—especially subjective aspects of cultures, which invest life with meaning and value. Examples are the disciplines of languages and literature, and philosophy and religion.

The Humanities are distinguished from the Social Sciences, which tend to focus on objective aspects of societies and on individual relationships in, and to, society. This distinction, however, is helpful only if used with reservations. Most humanistic disciplines do not neatly conform to one simple description or the other.

In the broadest terms, of course, the Humanities can be viewed as encompassing the Fine Arts. This is because a sense of aesthetics is among the most basic of human values. As a result, all cultures are centrally concerned with issues of form and beauty.

In the College of Arts and Sciences, the major disciplines comprising the Humanities division are as follows:

- English page 41
- Journalism page 43
- Modern Languages page 45
- Philosophy and Religion page 47
- Speech Communication page 49

English

Kinley E. Roby, Ph.D., *Professor and Chairperson*

Professors

Samuel J. Bernstein, Ph.D.
Robert J. Blanch, Ph.D.
Francis C. Blessington, Ph.D.
Irene Fairley, Ph.D.
Earl N. Harbert, Ph.D.
Victor E. Howes, Ph.D.
M. X. Lesser, Ph.D.
Samuel F. Morse, Ph.D.
James E. Nagel, Ph.D.
Jane A. Nelson, Ph.D.
Herbert L. Sussman, Ph.D.
Arthur J. Weitzman, Ph.D.
Paul C. Wermuth, Ph.D.

Associate Professors

Timothy R. Donovan, Ph.D.
Gary Goshgarian, Ph.D.
Gerald R. Griffin, Ph.D.
Ruth K. MacDonald, Ph.D.
Stuart S. Peterfreund, Ph.D.
Guy Rotella, Ph.D.
Lloyd A. Skiffington, Ph.D.
Joseph E. Westlund, Ph.D.

Assistant Professors

Richard Bullock, Ph.D.
Michael Goodman, Ph.D.
Helen Loeb, Ph.D.
Janet Randall, Ph.D.
Kristin Woolever, Ph.D.

Lecturers

Joseph deRoche, M.F.A.
David Tutein, M.A.

Continuing Lecturers

Faye Firnhaber, M.A.
Paul Gallagher, M.Ed.
Susan Goldwitz, M.A.
Eleanor Holstein, M.A.
Robin McCormack, M.A.

Instructors

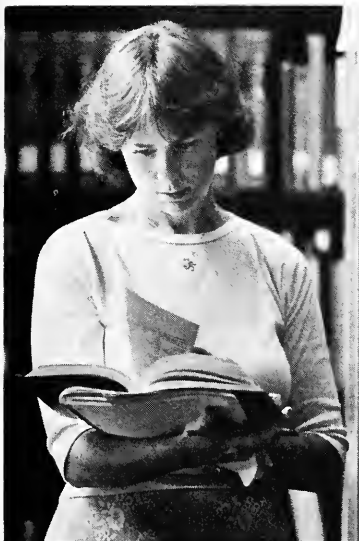
Jeffrey Berry, M.A.
Mary Blitzer-Fleds, M.A.
Arthur Casciato, M.A.
Wendy Goldberg, M.A.
Peter Martin Johnson, M.A.
David Klooster, M.A.
Margaret Rogers, M.A.

ABD Lecturer

John Ralston Haynes, M.A.
Michele Souda, M.A.

Adjunct Professor

Daniel Golden, Ph.D.



Professional Preparation

Aims The English Department curriculum is diverse in its aims and flexible in its design. For the general University community, the curriculum offers possibilities in creative, expository, and technical writing; linguistics; and American, British, and foreign literature. For the preprofessional student—in law, medicine, business, or engineering—it offers a broad intellectual and cultural frame for specialist concerns. For the minor in English, it offers the possibility of concentration in literature, writing, or technical writing to supplement the major concerns of other disciplines. For the major in English, it offers the opportunity to prepare for careers in teaching and research, advertising and publishing, radio and television—indeed, any field in which communication and judgment go hand in hand.

At a time when the price of imprecision in language is more than simple misunderstanding, and the cost of changing values more than personal uncertainty, the study of literature provides "a momentary stay against confusion." It deals with the hard edge of being, an insight into the ways of men and women, at once clear and complex. In fact, the very structure of literature gives shape and meaning to the often formless experiences of life. And it does so with grace and force. Put another

way, literature "tells it like it is," not statistically, not abstractly, but with the details of fully realized people in accessible worlds, in "imaginary gardens with real toads in them."

Description of the Major There is flexibility enough in the curriculum requirements and its details to accommodate the pace and interest of a wide range of students. Members of the Department are available throughout the year to help and advise students, but the critical choices rest essentially with the student. The American literature requirement, for example, may be met by successfully completing courses from among such recent offerings as Major American Novels, The New England Renaissance, American Realism, and American Romanticism. To this area, as to others, the Department regularly adds new courses and, hence, even more options.

A View of the Major The curriculum for the major in English allows the student to take a wide variety of courses while maintaining a strong background in the history of British and American literature. After completing the freshman requirement, the English major takes survey courses, area courses (in language or writing, British literature, American literature, major figure, genre), other electives, and, finally, a Junior-Senior Seminar as the culmination of study. A student has the opportunity to study science fiction, Kurt Vonnegut, topics in film, or children's literature, as well as Shakespeare, early American literature, Romantic poetry, and topics in literary criticism. In an effort to be responsive to the individual interests and academic needs of a particular student, independent study also may be arranged with an English instructor.

A View of the Minor Students who would like to minor in English may choose the minor in literature or in writing, either expository or creative. There is also a minor in technical communication which is described under the Special Program section of this publication. Within each minor, the student may select an individual course of study with the help of an English Department adviser.

Special Programs

See American Sign Language, Humanities Center, Independent Major, Irish Studies, Linguistics Minor, Media Studies Minor, Romanticism Past and Present, Studies in American Fiction, Technical Communication Minor, Tennessee Williams Review, and International Co-op.

Journalism

LaRue W. Gilleland, M.A.J., *Professor and Chairman*

Associate Professor

Patricia Hastings, Ph.D.

William Kirtz, M.S.

Assistant Professors

Jane Bick, M.A.

Louis Conrad, M.S.

Leon W. Lindsay, M.A.J.

William James Willis, Ph.D.

Professional Preparation



Aims The Department of Journalism offers students the opportunity to prepare themselves for productive careers in print and broadcast news media, advertising, and public relations. It emphasizes professional skills in information gathering, writing, editing, photography, and design and graphics that may be applied to numerous fields.

The Department also seeks to contribute to the existing body of knowledge in journalism/mass communications, especially knowledge which will help news media practitioners and educators perform their jobs with increasing effectiveness.

Career Opportunities Journalism offers many exciting, rewarding career opportunities. Northeastern University journalism graduates often work for daily and weekly newspapers, news departments of radio and television stations, wire services, general and specialized magazines, public relations departments, and advertising agencies.

A View of the Major A journalist should have a broad background of liberal arts courses on the undergraduate level, a need that most university journalism programs have long recognized. The student should have professional courses but not to the point of overspecialization.

The generally accepted formula for the bachelor's degree in journalism is a combination of 75 percent arts and sciences courses and 25 percent professional courses. The ideal schedule is one or two journalism courses each quarter, with additional work in the humanities, social sciences, physical sciences, and economics.

Because journalism skills can be better expanded and understood with the aid of a laboratory, upperclass journalism majors are encouraged to participate in the Cooperative Plan of Education. Co-op assignments with newspapers, radio and television stations, news bureaus, advertising agencies, and public relations offices provide a practical laboratory experience important in helping students to prepare themselves for careers in mass communications. In addition, such experience offers the student an advantage if he or she decides to seek admission to a graduate program.

All majors in this department complete a journalism core program that includes History of Journalism, Journalism Ethics, Newswriting, Editing, Law of the Press, and Photojournalism. In addition, each major takes courses in one of four concentrations—Newspaper/Print Media, Radio-Television News, Advertising, or Public Relations—according to his or her career objective.

Special Programs

See Center for Asian Studies, American Sign Language, London Political Internship Program, Independent Major, Media Studies Minor, Russian Studies, Institute for Sport and Social Issues, Technical Communication Minor, Urban Studies Minor, Women's Studies Minor, and International Co-op.

Modern Languages

Holbrook C. Robinson, Ph.D., *Associate Professor and Chairman*
Robert B. Modee, M.A., *Assistant Professor and Executive Officer*

Professor

Samuel Jaramillo, Ph.D.
Constance H. Rose, Ph.D.

Associate Professors

Israel A. Aluf, Ph.D.
Lillian Bulwa, Ph.D.
Benedetto Fabrizi, D.M.L.
Walter M. Gershuny, Ph.D.
Juliette M. Gilman, Ph.D.
Bonnie S. McSorley, Ph.D.
Philip H. Stephan, Ph.D.

Assistant Professors

Ross D. Hall, Ph.D.
Inez Hedges, Ph.D.
Neil A. Larsen, Ph.D.
Stephen A. Sadow, Ph.D.
John Spiegel, M.A.

Instructor

Daniel C. Barker, M.A.
Rita Soracco, M.A.

Professional Preparation

Aims The study of Modern Languages can be of value to all students, regardless of their major fields of interest. In the complex and rapid pace of modern life, there is a need for increased communication between varied and often divergent cultures, even those within the narrow confines of one's own community. To better understand and appreciate these cultures, it is very important to know the ways in which the members of the culture think.

As the principal means of communication, language frequently offers the key to understanding. Thus, language may serve to help one achieve a more cosmopolitan, open-minded, and sensitive view of the world.

The Department offers opportunities for background preparation for students interested in elementary, secondary school, or college teaching; international business relations; government service; journalism; library science; world affairs; travel; and community service (especially in Spanish-speaking areas). Those who wish to teach in college must plan on graduate study.

Description of the Major Available in French, German, Italian, Russian, or Spanish, the major in Modern Languages normally requires advanced courses in two languages. The freshman year usually is considered a year to establish the basic foundation upon which the major will be formed. It should be utilized to fulfill as many general requirements as possible so that during the upperclass years more time can be devoted to the major discipline.

Normally the study of a second (minor) language begins in the second year. However, in exceptional cases, this pattern may be altered to permit students to begin their second language in the freshman year or, perhaps, postpone it to a later year. The Modern Language major should plan to take at least two language electives per quarter from the beginning of the second year. Again, of course, this pattern may be varied to fit the needs of the individual student.

It should be noted that the requirements indicated here for the major and minor languages are *minimum* requirements. When at all possible, a student is strongly encouraged to go beyond them, and even, perhaps, to pursue a third language.

The Department is currently designing a one-language major. Students are urged to consult their departmental advisers for further information concerning this program and other possible curriculum changes.

A View of the Major The Department offers a choice of either a Bachelor of Arts or a Bachelor of Science degree. For either degree, the student must select a major as well as a minor language from French, German, Italian, Russian, or Spanish. Both degrees require Freshman English.

The B.A. is, of course, the traditional degree of this discipline. Candidates for the B.A. must satisfy the College requirements for graduation and, in addition, must meet the departmental requirements in their major. These requirements are eight quarter hours in Western Civilization, eight additional quarter hours in history (any other history courses relevant to the major are acceptable), eight quarter hours of Survey of English Literature, a minimum of thirty-two quarter hours of advanced work in the major language, and eight quarter hours of advanced work in the minor language. Advanced work may be defined as any course beyond the intermediate level of the language.

The Bachelor of Science degree in Modern Languages differs from the B.A. primarily in its emphasis. Whereas the B.A. requires that the student satisfy the full general requirements of the College of Arts and Sciences, the B.S. waives certain of these requirements in favor of a more concentrated program in the major area.

In addition, the candidate for the B.S. degree must complete eight quarter hours of composition and conversation in the major language and eight quarter hours of composition and conversation in the minor language. Candidates then must complete forty additional quarter hours of advanced work in the major language and sixteen additional quarter credits of advanced work in the minor.

Since the Department is currently designing a one-language major, students are urged to consult their departmental advisers for further information concerning this program and other possible curriculum changes.

Description of the Minor For students interested in acquiring proficiency in one foreign language as an adjunct to their major, the Department offers a minor in Modern Languages, open to students of all colleges. The details of the requirements for a minor vary slightly from language to language, but, in all cases, the student is required to take a total of six courses. Generally, two composition and conversation courses, a civilization course, and an introductory course in literature are required. The remaining courses are free electives drawn from advanced courses offered by the Department.

Students are urged to consult the Department adviser for further information about the minor.

Additional Information In the basic language courses, attendance in the language laboratory is required for two half-hour sessions per week. The facilities of the language laboratory are also available on an optional basis for advanced work. The Department lounge is available to Modern Language students. See page 95 for information on courses in American Sign Language.

Special Programs

See Center for Asian Studies, American Sign Language, French for Business and Economics, Business German, Humanities Center, Independent Major, International Co-op, Irish Studies, Russian Studies, and Elementary Spanish for Criminal Justice and Human Services.

Philosophy and Religion

Michael R. Lipton, Ph.D., *Associate Professor and Chairman*

Professors

Walter L. Fogg, Ph.D.

Pavel Kovaly, Ph.D., C.Sc.

Associate Professors

William J. DeAngelis, Ph.D.

Bart K. Gruzalski, Ph.D.

Edward A. Hacker, Ph.D.

Stephen L. Nathanson, Ph.D.

Gordon E. Pruett, Ph.D.

Susan M. Setta, Ph.D.

Joseph H. Wellbank, Ph.D.

Professional Preparation

Aims Philosophy deals with a wide range of questions and issues generated by various aspects of human experience, by the beliefs and theories people hold, and by the practical problems human beings confront. Philosophy includes both questions and theories related to art, religion, morality, society, and natural and social sciences. Because of the breadth of its concerns, the study of philosophy provides a unique opportunity for students to examine their beliefs in many areas through critical reflection.

Through readings, discussion, and writing, philosophy students can encounter and examine questions concerning the nature and validity of religious beliefs, moral judgments, and scientific theories, as well as questions of values and social policy in such areas as law, medicine, and technology. In all these areas, analysis of issues and evaluation of arguments provide an opportunity to understand diverse claims to knowledge and areas of controversy.

The program includes courses that may help strengthen the student's work in other areas and provide an understanding of the methods and traditions of philosophical and religious thought. A major in Philosophy may also help a student to acquire a broad background in the humanities and to sharpen his or her critical abilities in preparation for graduate or professional study in many areas. Indeed, former Philosophy majors can be found in the most diverse of professional careers. For students majoring in another discipline, the Department offers a minor program, which can be a valuable supplement to most fields.

The program in Religion offers students the opportunity to acquire an understanding of religious experience, both as an individual response and within its social, historical, literary, and political context. Specific religions (Christian, Jewish, Hindu, etc.) are studied as well as the mythical and mystical dimensions of religious experience in general. The program strives to clarify the relation between the religious experience and other facets of human life that are the concern of both the liberal arts and the professions. Although a major is not offered in Religion, the program attempts to provide a basic introduction to religious studies. Both introductory and intermediate-level courses are offered.

Description of the Major Northeastern's program for a Philosophy major is designed to offer students a balanced understanding of the nature of philosophy and particular philosophical problems that arise in the various arts and sciences. A maximum number of electives has been provided so that students may choose in accordance with their own backgrounds and interests. Students may pursue either a five-year co-operative or a four-year full-time course of study.

All degree candidates in Philosophy must take at least eight quarter hours in English and fifty-two quarter hours in the Department and must meet the following specific requirements:

1. Classical Greek Philosophy *and* Modern Philosophy
2. Introduction to Logic *or* Symbolic Logic (the Department emphatically recommends that students contemplating graduate studies in Philosophy take Symbolic Logic)
3. Theory of Knowledge *or* Metaphysics *or* Moral Philosophy and
4. At least one seminar
5. Thirty-two quarter hours of Philosophy electives, to be selected after consultation with the student's departmental adviser

Description of the Minor To attempt to meet the needs of students who are majoring in other areas but have a special interest in Philosophy, the Department offers a minor in Philosophy. The program contains an essential core of courses, as well as a great range of electives to accommodate individual interests.

Specific requirements:

1. An introduction to philosophy course
2. Either Classical Greek Philosophy *or* Modern Philosophy
3. Either Introductory Logic *or* Symbolic Logic
4. Either Moral Philosophy *or* Theory of Knowledge *or* Metaphysics *or* Philosophy of Mind
5. Three electives in Philosophy to bring the total number of quarter hours in Philosophy to twenty-eight

Special Programs

See Center for Asian Studies, Humanities Center, Independent Major, Women's Studies Minor, and International Co-op.

Speech Communication

Carl W. Eastman, M.A., *Associate Professor and Chairman*

Associate Professor

Michael L. Woodnick, M.S.

Assistant Professors

Joan F. Drexelius, Ph.D.

Alan J. Zaremba, Ph.D.

Lecturers

Wesley Horner, B.M.

Joseph D. Warren, Ph.D.

Professional Preparation

Aims The Department of Speech Communication seeks to help stimulate the personal and professional growth of the student through a study of the principles and methods of communication.

Courses are designed to aid students in understanding the communication process and the roles of communication in society. The Speech Communication program also helps students to increase their self-awareness and heighten personal development by offering theoretical and experiential learning opportunities.

More than twenty-five courses in such areas as persuasion, group discussion and conference techniques, interpersonal communication, mass media, broadcasting, communication theory, and public address are designed to meet the needs of students, whether majoring or minor-ing in Speech Communication or selecting courses for personal development to supplement professional training in other fields.

Description of the Major The objectives of the Speech Communication major are threefold:

1. To stimulate the student's personal growth and development in perception and self-expression through the study of historical, contemporary, and artistic aspects of speech and communication, and to provide organized knowledge and critical insight;
2. To help to prepare the student for professions that require both a theoretical and a technical knowledge of communication, such as broadcasting, the law, government service, public relations, advertising, social service, industrial communication, and similar fields;
3. To help prepare the student for advanced graduate study in communication and other professional fields.

A View of the Major Students may receive either a B.A. or B.S. degree through concentrations related to mass communication, interpersonal communication, organizational communication, communication research, communication theory, advocacy, and public address. Through selection of the appropriate concentration within the Department and complementary elective courses in other departments, students are afforded considerable flexibility in tailoring their programs to satisfy their personal and professional needs.

To further provide for the unique needs of students with specialized interests or professional goals, the Department offers directed-study and internship programs. Virtually every Speech Communication major completes one or more projects in each of these programs.

In directed study, the student works closely with a chosen faculty adviser while completing a student-selected research or performance project. Generally commensurate with the workload of a one-quarter

course, directed-study projects deal with such areas as surveying and interpreting communicative behavior, studies of the rhetoric of political campaigns, or the effects of the media on society.

The internship program offers students the opportunity for professional development through field experiences designed to complement or implement their classroom training. Distinct from the Co-op Plan, the internship program provides academic credit for unpaid, part-time, on-site activities, during the student's academic quarters. Internships, carefully selected by the student and faculty advisers with an understanding based on the student's goals, often result in the student's placement in active roles in commercial broadcasting studios, advertising firms, and governmental agencies.

Description of the Minor Students majoring in such fields as Political Science, Business, and Human or Social Services or Education may develop a minor that complements their academic major by selecting appropriate courses with the aid of a Speech Communication faculty adviser.

Basic theoretical competence and personal skills in the areas of intra-personal, interpersonal, group, organizational, and public communication may be acquired by taking the following four core courses required of all minors: Introduction to Communication Theory, Business and Professional Speaking, Interpersonal Communication I, and Group Discussion.

Individual needs and specific goals may be satisfied by selecting three additional electives with the approval of the Speech Communication faculty. Recommended elective groupings have been developed for students concentrating in Management, Marketing, Elementary or Secondary Education, Human or Social Services, Political Science, Sociology, Psychology, and Journalism.

Special Programs

See American Sign Language, Center for Asian Studies, Humanities Center, Technical Communication Minor, Independent Major, and International Co-op.

Natural Sciences and Mathematics

The natural sciences are disciplines based chiefly on objective, quantitative hypotheses that can be confirmed or refuted by experimentation involving numerical measurements. These disciplines are sometimes referred to as the “exact sciences.” However, that may be somewhat misleading, since controlled approximations are more characteristic of them than exactness.

The older term used for the natural sciences (in the seventeenth and eighteenth centuries) was “natural philosophy.” This embraced the physical and life sciences as well as mathematics. The great treatise of Isaac Newton, which altered completely the understanding of the physical universe, was titled *Philosophiae naturalis principia mathematica* (Latin for *Mathematical Principles of Natural Philosophy*).

Although mathematics is not confined to the study of nature as such—having more basic roots in subjective thought than in objective reality—it is nearly always grouped with the natural sciences. Indeed, mathematics is sometimes referred to as the “queen and servant of the sciences.”

In the College of Arts and Sciences, the major disciplines comprising the Natural Sciences and Mathematics Division are as follows:

- Biology page 52
- Chemistry page 55
- Earth Sciences page 58
- Mathematics page 60
- Physics page 62

Biology

David C. Wharton, Ph.D., *Professor and Chairman*

Professors

Francis D. Crisley, Ph.D.
Janis Z. Gabliks, Ph.D.
M. Patricia Morse, Ph.D.
Nathan W. Riser, Ph.D.
Fred A. Rosenberg, Ph.D.
Ernest Ruber, Ph.D.
Phyllis R. Strauss, Ph.D.

Associate Professors

Joseph L. Ayers, Ph.D.
Kostia Bergman, Ph.D.
Charles H. Ellis, Jr., Ph.D.
Gwilym S. Jones, Ph.D.
Helen H. Lambert, Ph.D.
Charles A. M. Meszoely, Ph.D.
Joseph V. Pearincott, Ph.D.
Daniel C. Scheirer, Ph.D.
Henry O. Werntz, Ph.D.

Assistant Professors

Donald P. Cheney, Ph.D.
Richard L. Marsh, Ph.D.
Duncan R. Munro, Ph.D.
Susan Powers-Lee, Ph.D.
Christina Reyer, Ph.D.

Adjunct Professor

Bruce B. Collette, Ph.D.
Hillel Levinson, Ph.D.

Professional Preparation

Aims The Biology major offers students the opportunity to develop a fundamental background in the organization and the processes of life, from the level of molecules and cells through the level of organs and organ systems to the level of populations, species, ecosystems, and evolution. The major also offers the mathematical, chemical, and physical background necessary to understand biology and to help train students in practical scientific skills associated with each of these areas of study. Finally, it allows students to begin to specialize in a subdiscipline of biology.

Description of the Major The major consists of ten biology courses in addition to those required in chemistry, physics, and mathematics. Six of the biology courses constitute a required core sequence: Principles of Biology I, II, and III; Environmental and Population Biology; Genetics and Developmental Biology; and Cell Physiology and Biochemistry. A student normally should take the core before taking a required minimum of four upperclass biology electives. It is usually possible to follow the prescribed sequence if a student has decided on the major in the freshman or sophomore year. For students who may enter the major in the middler year, it is often possible to complete the major in the normal time by taking some of the electives concurrently with core requirements.

To graduate with a major in Biology, a student must have a cumulative Quality Point Average (QPA) of 2.000 for all science and mathematics courses required for the major. There are two programs within the Biology major, one leading to the Bachelor of Arts degree and the other to the Bachelor of Science degree. Both the B.A. and the B.S. degrees require a modern language. The B.S. program is more rigorous and extensive in its mathematics and science requirements and thus offers better preparation for postgraduate study. The difference is mainly one of emphasis, however.



After completing the core Biology program, students interested in independent research may arrange with individual faculty to undertake Directed Study; if eligible, they may be invited to undertake a more extensive Honors Program involving up to four quarters of research.

The Department publishes a booklet, *The Biology Undergraduate Advisory Guidebook*, which explains the required and recommended courses and the QPA standards in science for Biology majors. The *Guidebook* is available in the Biology Office, Room 403, Richards Hall. Students intending to major in Biology should obtain a copy as early as possible after their enrollment at Northeastern. Biology majors wishing to pursue a minor in another field should see their biology adviser as early in their program as possible, for coordination of major and minor requirements.

A View of the Major The Biology major provides an opportunity for excellent preparation in a wide variety of careers or professions in the life sciences, including medical, dental, and other health-related professions. Graduate study leading to a master's or doctoral degree can open careers in upper-level teaching and/or research in one of the specialized areas of biology, such as zoology, botany, microbiology, physiology, ecology, marine biology, cell biology, or biochemistry. Biology majors may also pursue postgraduate training in such health-related areas as nutrition, public health, or medical technology.

Biology majors not wishing to enter professional or graduate schools may find employment on technical levels in federal, state, industrial, hospital, or university laboratories doing research, survey, or quality control in a biological area. After graduation they may also be able to enter directly into positions in industries involved in the manufacture and distribution of pharmaceuticals, biological products, food, or scientific equipment. Many biologists are employed at all levels in fisheries, forestry services, county agencies, museums, aquariums, research vessels, and marine stations.

Preprofessional students (for example, premedical or predental) are urged to consult with the preprofessional advisory committee early in their careers at Northeastern. *Students are cautioned that the successful completion of the required preprofessional courses by no means ensures admission to a professional school since other factors are also involved.*

Description of the Minor A minor in Biology consists of any six biology courses for which the student has the prerequisites, plus two more courses which may be biology courses or courses from other departments that serve as prerequisites for Biology courses. At least five of the total eight courses must include laboratory, and a student may not count toward the Biology minor more than one course, or course sequence, that covers substantially the same material.

To accommodate the needs of students majoring in many different fields, the Biology minor requirements have been phrased in a very general and flexible way. To ensure that course selection is sound and appropriate to the student's background, *each student's Biology minor program must receive the signed approval of the Biology minors' adviser.* The student should obtain this required approval of his/her program before the start or, at the latest, by the end of the first Biology course. Failure to do so may result in courses not being counted for a minor, if the adviser finds them to have been inappropriate selections.

The academic standards for a minor in Biology are the same as those for a Biology major; namely, a QPA of 2.000 must be achieved for those courses used to satisfy the minor requirements. Courses taken on a pass/fail basis are not acceptable for minor credit.

Suggested course groupings for a Biology minor have been developed for students with different backgrounds in college mathematics and science. The "core" minor for students with considerable course work in mathematics, chemistry, or physics provides the basic foundation on which a Biology major is built, without advanced specialization. For students with less or no college mathematics/science background, three other minor options provide the opportunity for first-level exposure to the basic principles of Biology, plus an opportunity to achieve some advanced specialization in plant and/or animal studies or to explore human biology and the problems of the environment. For further information, consult with the Biology minors' adviser.

Laboratories

The Biology Department has specially equipped teaching laboratories for general biology, botany, anatomy, microbiology, microscopy, physiology, zoology, and cell biology. Equipment for field work, museum specimens, models, charts, and closed-circuit television are employed in laboratory instruction. Additional facilities include aquarium and animal rooms, stockrooms, preparation rooms, research areas, and a large suburban greenhouse and woodlot. The Department has close association with the University's Marine Science and Maritime Studies Center in Nahant and with the University's Electron Microscopy Center.

Special Programs

See School of Field Studies, Independent Major, Instrumentation for Science Minor (see Physics Section), International Co-op, Marine Studies Minor, Combined Program with Preprofessional Schools and Sea-Quarter.

Chemistry

Philip W. Le Quesne, Ph.D., D.Sci., *Professor and Chairman*

Professors

Geoffrey Davies, Ph.D.
 Bill C. Giessen, Dr.Sc.Nat.
 Arthur M. Halpern, Ph.D.
 Barry L. Karger, Ph.D.
 William M. Reiff, Ph.D.
 John L. Roebber, Ph.D.
 Robert A. Shepard, Ph.D.
 Alfred Viola, Ph.D.

Professors Jointly Appointed

John L. Neumeyer, Ph.D.
 Robert F. Raffauf, Ph.D.

Associate Professors

David A. Forsyth, Ph.D.
 David M. Howell, Ph.D.
 Conrad M. Jankowski, Ph.D.
 Elmer E. Jones, Ph.D.
 Paul Vouros, Ph.D.
 Robert N. Wiener, Ph.D.

Assistant Professors

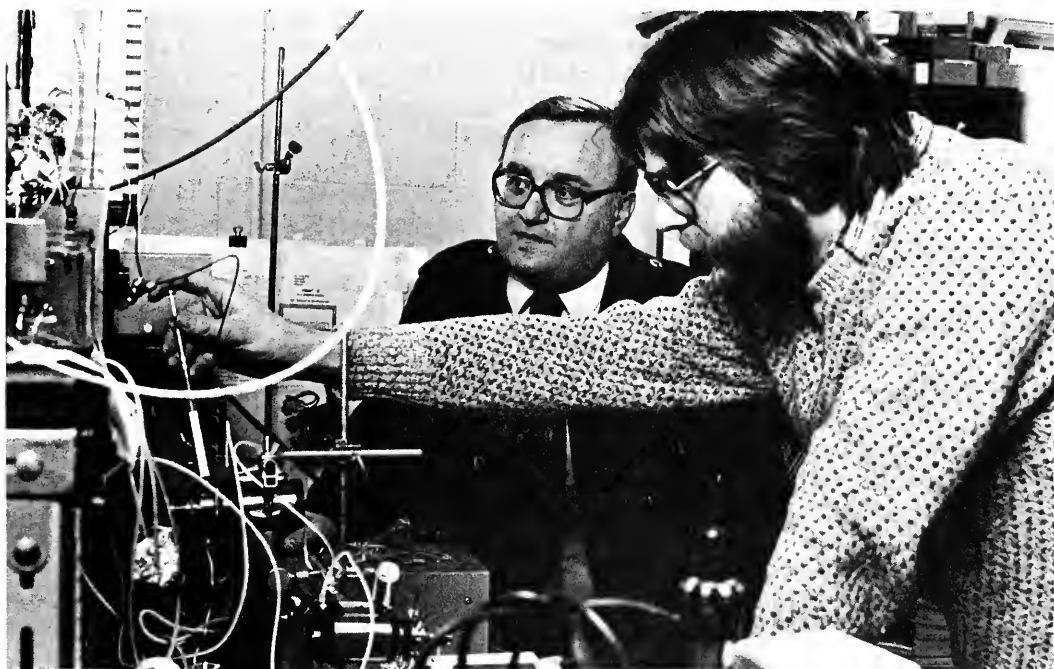
Lee A. Flippin, Ph.D.
 Thomas R. Gilbert, Ph.D.
 Michael E. Kellman, Ph.D.
 Kay D. Onan, Ph.D.
 Mary J. Ondrechen, Ph.D.
 John Wronka, Ph.D.
 Lawrence D. Ziegler, Ph.D.

Instructors

James F. Hall, Jr., M.S.
 Bernard J. Lemire, B.S.
Supervisor of Laboratories

Professional Preparation

Aims The educational objectives of the Chemistry Department are to give students the opportunity to 1) experience the intellectual stimulation of studying a physical science, 2) grasp the basic principles and techniques that are central to a variety of chemistry-related careers, and 3) prepare for graduate study in chemistry or related fields. These objectives are implemented by the Department's highly research-oriented faculty, including leaders in various fields of the science.



Description of the Major Chemistry is concerned with the structure and properties of substances and with the transformations they undergo. The undergraduate program leads to either a B.A. or a B.S. degree in Chemistry. It is relatively small, having a combined total of about sixty undergraduates throughout all levels. Class sizes, too, are not large. For example, the typical size of the freshman Chemistry course given to chemistry and other science majors is about forty students. The upper-class chemistry major courses are generally smaller. All of the courses are taught by full-time chemistry faculty members, and there is considerable opportunity for direct interaction between faculty and students. Both the chemistry curriculum and the departmental facilities are approved by the American Chemical Society (A.C.S.); thus, the B.S. degree which we award is A.C.S. certified and therefore carries national recognition for quality.

Modern chemistry is the cornerstone for a large number of professions and industries. Challenging career opportunities exist in almost all technical fields in which functions such as research, development, production, sales, market analysis, quality control, and management are involved. *The Chemistry major programs offer the students an excellent opportunity for preparation in the study of medicine, dentistry, and for advanced study in many fields of science.* For students who choose to participate in the Cooperative Plan of Education there can be additional professional benefits. The practical experience gained on a job can place chemistry in a more realistic perspective than may academic training alone and may help students to prepare themselves for better employment prospects upon graduation.

The Department publishes an informational booklet, *Chemistry at Northeastern*, which describes the Chemistry major curriculum and requirements in detail. Interested students may obtain a copy of this booklet in the main office of the Chemistry Department, Room 102, Hurtig Hall or from the Department of Admissions, 150 Richards Hall.

A View of the Major The Department offers two major programs that lead to the B.S. or B.A. degree. Both are based normally on the five-year cooperative-study plan, but academically equivalent four-year study options are available. The two degree curricula differ mainly in their arts and sciences content and advanced science course requirements. Departmental advisers are ready to provide assistance and counseling to all Chemistry majors in relation to course selections and other professional matters.

The Chemistry major programs at Northeastern are based on a career-oriented concept. The basic core of courses in chemistry, mathematics, and physics may be supplemented with selected courses in other areas. Thus, the program offers the student an opportunity to prepare for any one of a wide variety of careers. Alumni have pursued careers in many areas, such as:

- The health professions (medicine, dentistry)
- Professional and technical employment in industry
- Chemical sales and management
- Teaching and research via graduate study
- Clinical chemistry, medicinal chemistry, and pharmaceutical chemistry
- Geochemistry, mineralogy, and environmental chemistry
- Forensic chemistry

Departmental advisers suggest various course options for students interested in preparing for any of the above careers. The variety of careers open to persons with strong backgrounds in chemistry is extensive, and other options can be constructed from the large number of courses offered at the University.

A large part of the curriculum is common to all options. It consists of courses in English, calculus, physics, and basic chemistry, which are taken in the freshman year. Students may be exempt from the General Chemistry courses by passing equivalency tests; in this case other courses are substituted. In the upperclass years, students take courses in organic, inorganic, physical, and analytical chemistry. For the B.S. degree, some additional advanced mathematics and science courses are required. German or Russian is strongly recommended for students who plan to pursue graduate study in the sciences.

Qualified students are encouraged to undertake a research project under the supervision of a faculty member. An honors program is open to especially able students.

Description of the Minor A minor program in Chemistry is available for students majoring in other fields. It consists of courses in general, analytical, organic, and physical chemistry. Further information may be obtained from the Chemistry Department Office, Room 102, Hurtig Hall.

Accreditation

The Chemistry programs at Northeastern are approved by the American Chemical Society. The B.S. degree meets the Society's requirements for certification, which means that a certified graduate is eligible for full membership in the A.C.S. after two years of experience.

Facilities and Research

The main facilities of the Chemistry Department are housed in Hurtig Hall, a modern, air-conditioned, five-story building that contains equipment for up-to-date teaching and research. Faculty offices are located there, as is the James Flack Norris Room, which serves as a lounge for undergraduate Chemistry majors. Additional research facilities are located in the Forsyth Building and in the Institute of Chemical Analysis, Applications, and Forensic Science. The Department's major research equipment includes electron microscopes, mass spectrometers, lasers, X-ray diffractometers, nuclear magnetic-resonance and electron spin-resonance spectrometers, Gouy and Faraday magnetic balances, Mossbauer spectrometers, and a variety of ultraviolet and infrared spectrometers. Undergraduate students taking advanced courses or working on research projects may utilize certain of these instruments.

Active research programs are under way in synthetic and mechanistic organic chemistry, natural products chemistry, inorganic chemistry, chemical oceanography, photochemistry, and spectroscopy, theoretical chemistry, analytical chemistry, separation science, and solid-state chemistry.

Special Programs

See Combined Program with Pre-professional Schools, School of Field Studies, Independent Major, International Co-op, Instrumentation for Science Minor (see Physics Section), Marine Studies Minor, and Sea-Quarter.

Earth Sciences

Richard H. Bailey, Ph.D., *Associate Professor and Chairman*

Associate Professors

Bernard L. Gordon, M.S.
Richard S. Naylor, Ph.D.
William A. Newman, Ph.D.
Peter S. Rosen, Ph.D.
Martin E. Ross, Ph.D.
David L. Wilmarth, Ph.D.

Assistant Professors

Malcolm D. Hill, Ph.D.

Professional Preparation

Aims The Department of Earth Sciences offers a degree program in geology as an in-depth study of a major area of the earth sciences, as well as courses in geology, oceanography, and astronomy, which are available to all students.

Description of the Geology Major Geology is a broad-based science that deals with the study of the physical features, composition, history, and processes of the earth. The study of geology, however, also demands an understanding of the application of scientific knowledge to current problems and concerns. For example, the manufacture of an enormous number of products composed of metals and petroleum derivatives is a primary basis of the economy of our society. Understanding the origins of these natural resources and the ways in which to ensure their continued supply is, therefore, one of the major roles of today's geologists. Only a small portion of the earth has been studied in detail, leaving many unexplored frontiers for each new graduate in the field.

A View of the Major Since the study of geology utilizes principles of other physical sciences, students should complete basic courses in chemistry, physics, and mathematics along with Physical and Historical Geology during their first two years. After completing the introductory geology courses and one year of chemistry, every Geology major takes a three-course sequence—Descriptive Mineralogy, Optical Crystallography, and Optical Mineralogy—since a knowledge of minerals is fundamental to geological understanding. In addition to the required introductory and mineralogy courses, the student chooses a minimum of six (for the B.A. degree) or eight (for the B.S. degree) additional geology courses. There are also electives required in the areas of the humanities and social sciences.

Each student is assigned to an adviser in the Department. The adviser assists students in making appropriate course selections as their knowledge increases and special interests develop. Though not required, courses in petrology, structural geology, and paleontology are usually among the electives chosen by undergraduates.

During the junior and senior years, students may select undergraduate research as one of their elective courses. Under the supervision of a faculty member, a problem is selected, defined, and researched. These projects offer undergraduates the opportunity to go much more deeply into some aspect of geology that holds particular interest for them. Students who meet the college requirements for the honors program may also be invited to carry out an undergraduate research project.

In addition to its major curriculum the Earth Sciences Department also offers a minor program in Geology.

Special Information

Field Trips Though much geology can be learned from textbooks and in the laboratory, a sound geological education must also include first-hand experience in the field and direct observation of geological phenomena. Whenever it is appropriate, field work on an individual or group basis will be part of courses.

Special Programs

See School for Field Studies, Independent Major, International Co-op, Instrumentation for Science Minor (see Physics Section), Marine Studies Minor, and SeaQuarter.



Mathematics

Maurice E. Gilmore, Ph.D., *Professor and Chairman*

Professors

Samuel J. Blank, Ph.D.
 Bohumil Cenk, Sc.D.
 David I. Epstein, Ph.D.
 Holland C. Filgo, Ph.D.
 Alberto R. Galmarino, Ph.D.
 Arshag B. Hajian, Ph.D.
 Evelyn F. Keller, Ph.D.
 Nancy Kopell, Ph.D.
 Jayant Shah, Ph.D.
 Gabriel Stolzenberg, Ph.D.
 Jack Warga, Ph.D.

Associate Professors

Shirley A. Blackett, M.Ed.
 Mark Bridger, Ph.D.
 Gail Carpenter, Ph.D.
 Bruce Claflin, M.S.
 Ron Donagi, Ph.D.
 Ellen H. Dunlap, B.A.
 John Frampton, Ph.D.
 Terence Gaffney, Ph.D.
 R. Mark Goresky, Ph.D.
 Eugene Gover, Ph.D.
 Samuel Gutmann, Ph.D.
 Anthony Iarrobino, Ph.D.
 Nishan Krikorian, Ph.D.
 Richard Porter, Ph.D.
 Mark Ramras, Ph.D.
 Thomas O. Sherman, Ph.D.
 Victor R. Staknis, Ph.D.
 Chuu-Lian Terng, Ph.D.

Assistant Professors

Margaret Bayer, Ph.D.
 David Bernstein, Ph.D.
 Robert W. Case, Ph.D.
 Mo-suk Chow, Ph.D.
 Dom P. deCaen, Ph.D.
 Stanley J. Eigen, Ph.D.
 Leonore Feigenbaum, Ph.D.
 Laurence S. Gillick, Ph.D.
 Solomon M. Jekel, Ph.D.
 Donald R. King, Ph.D.
 Marc Levine, Ph.D.
 Zakhar G. Maymin, Ph.D.
 Robert C. McOwen, Ph.D.
 Carla B. Oblas, M.S.
 Prabhakar A. Rao, Ph.D.
 Catherine M. Roche, Ph.D.
 Martin Schwarz, Ph.D.
 Barbara Tabak, Ph.D.
 Gordana G. Todorov, Ph.D.

Post-Doctoral Lecturer

James A. Mondaldi, Ph.D.

Professional Preparation

Aims The Department offers interested students the opportunity to develop and expand their abilities in this exact science, one of the oldest and most basic of all the sciences.

Description of the Major The Department offers two programs of study in mathematics. One of the programs in mathematics leads to a Bachelor of Arts degree and requires a minimum of thirteen mathematics courses. Students in the Bachelor of Arts program also must complete a foreign language requirement. Because mathematics-related material is more often written in French, German, Italian, or Russian, one of these languages is recommended. The Department also offers a Bachelor of Science degree program, which requires a minimum of sixteen mathematics courses but does not require the study of a foreign language.

A View of the Major All students must take a basic sequence of mathematics courses, which, as a rule, should be completed by the end of the sophomore year. The sequence offers students the opportunity to acquire a working knowledge of the calculus of one and several variables, differential equations, some linear algebra, and numerical methods. With respect to the latter, although a computer programming course is not required, students will be encouraged and eventually expected to learn the basic programming skills necessary for numerical solutions of complex problems.

A transition from the basic sequence to more advanced parts of the curriculum is provided by Analysis I-II and Advanced Linear Algebra I. These courses are prerequisites for many advanced courses in applied analysis, complex analysis, topology, and foundations.

As a rule, students planning to take a substantial number of mathematics courses (e.g., two per quarter) should take Analysis I-II and Advanced Linear Algebra I in the middler year. Students may wish to take a prerequisite for more advanced courses in algebra and/or one that includes linear, nonlinear, and dynamic programming. Courses in probability, statistics, and numerical analysis may also be taken directly after the basic sequence.

Double Majors For mathematics majors, it is possible to follow programs leading to a double major in mathematics and another discipline from the College of Arts and Sciences or the College of Computer Science.

Special Programs

See Independent Major, International Co-op, Instrumentation for Science Minor (see Physics Section), and SeaQuarter.

Physics

Robert P. Lowndes, Ph.D., *Professor and Chairman*

Professors

Ronald Aaron, Ph.D.
 Petros N. Argyres, Ph.D.
 Richard L. Arnowitz, Ph.D.
 Alan H. Cromer, Ph.D.
 William L. Faissler, Ph.D.
 Marvin H. Friedman, Ph.D.
 David A. Garelick, Ph.D.
 Marvin W. Gettner, Ph.D.
 Michael J. Glaubman, Ph.D.
 Hyman Goldberg, Ph.D.
 Walter Hauser, Ph.D.
 Giovanni Lanza, Ph.D.
 Bertram J. Malenka, Ph.D.
 Pran Nath, Ph.D.
 Clive H. Perry, Ph.D.
 Eugene J. Saletan, Ph.D.
 Carl A. Shiffman, Ph.D.
 Jeffrey B. Sokoloff, Ph.D.
 Yogendra N. Srivastava, Ph.D.
 Michael T. Vaughn, Ph.D.
 Eberhard von Goeler, Ph.D.
 Allan Widom, Ph.D.
 Fa Yueh Wu, Ph.D.

Associate Professors

Arun Bansil, Ph.D.
 Paul M. Champion, Ph.D.
 Jorge V. José, Ph.D.
 Marie E. Machacek, Ph.D.
 Robert S. Markiewicz, Ph.D.

Assistant Professors

George O. Alverson, Ph.D.
 William N. Celmaster, Ph.D.
 John V. Chalupa, Ph.D.
 Ali H. Chamseddine, Ph.D.
 Stephen McKnight, Ph.D.
 Mark Novotny, Ph.D.
 Robert Polvado, Ph.D.
 W. David Shambroom, Ph.D.

Professional Preparation

Aims Physics is concerned with the fundamental principles that govern natural phenomena, ranging in scale from collisions of subatomic particles, through the behavior of solids and liquids, to exploding stars and colliding galaxies.

Understanding these principles can help us unravel, explore, and predict the basic phenomena and processes of not only physics, but also of biology, chemistry, and the earth and space sciences. Such an understanding will also help with the creation, development, and operation of a broad spectrum of micro and macro devices ranging from the silicon chip electronic systems and lasers of today's high technology to the more conventional mechanical and electrical instruments and machinery currently used in research and industrial organizations.

The educational objectives of the Physics undergraduate programs are to provide students with the opportunity to

1. experience the intellectual stimulation of studying science and, specifically, physics and astrophysics;
2. experience, by association, the excitement of the front-line research programs ongoing in the Department;
3. achieve an understanding of the basic principles and techniques that are central to the broad array of physics-related careers;
4. prepare for graduate study in physics or related fields.

To this end the Physics Department offers undergraduate courses at four levels:

1. descriptive courses intended primarily for nonscience majors with limited mathematical backgrounds;
2. general survey courses intended for students in scientific and engineering fields;
3. advanced courses focusing on particular areas of physics and intended mainly, but not exclusively, for Physics majors; and
4. highly advanced courses intended mainly, but not exclusively, for prospective graduate students in Physics.

Description of the Major Students who major in Physics are offered the opportunity to prepare for a wide variety of careers. In addition to work in industrial, government, and high-technology laboratories in areas of applied physics, students who have mastered the fundamental principles emphasized in a physics education may find opportunities in allied fields, such as biophysics, computer sciences, geophysics, medical and radiation physics, and various branches of engineering. Additionally, many students majoring in Physics go on to pursue advanced degrees in physics and related fields.

A student majoring in Physics may follow either a four-year full-time program or a five-year co-op program. The latter program allows students to alternate between the classroom and off-campus work experiences in research and professional organizations located not only in the important high-technology centers in and around Boston, but elsewhere in the United States. The co-op program enhances and complements the educational process, and helps provide financial assistance and the development of valuable career contacts with employers. In a number of cases, students in the Physics major work on co-op with a high-technology company, and then return to school and work with a related aspect of one of the research programs of the Department either for credit or as work-study.

A View of the Major Physics majors may obtain one of three degrees, the Bachelor of Arts in Physics, the Bachelor of Science in Physics, or the Bachelor of Science in Applied Physics.

The first-year program for all Physics majors includes a three-quarter physics sequence common to all science and mathematics majors, and a three-quarter calculus sequence. The remaining courses in each quarter of the freshman year can be chosen from a wide range of electives, but generally students are advised to meet some of the core curriculum requirements and perhaps to learn to use the computer.

Beyond the basic first year survey courses in physics and mathematics, B.A. students are required to pass the two second-year intermediate physics courses, three upper-division lecture courses, three upper-division laboratory courses, as well as one upper-division mathematics elective. In addition, the College requirements must also be satisfied. This program is extremely flexible and allows the B.A. Physics major to pursue other interests in depth.

Candidates for either of the B.S. Physics degrees must complete the two intermediate physics courses, the second year of the calculus sequence, and a year of differential equations. In addition, the B.S. candidates must satisfy the appropriate college requirements.

Candidates for the B.S. in Physics must also complete seven upper-division physics lecture courses, three upper-division physics laboratory courses, and five additional technical electives (courses from the sci-

ences, mathematics, or engineering departments). The B.S. in Physics program is most appropriate for those students who wish to pursue graduate study in physics.

In addition to the common intermediate level courses described above, candidates for the B.S. in Applied Physics degree must complete three upper-division physics lecture courses, five upper-division physics laboratory courses, three computer science courses, and four additional technical electives. The B.S. in Applied Physics program is most appropriate for those students who expect to proceed directly to work after the B.S. degree, or for those who expect to go to graduate school in related fields.

The upper-division lecture courses offered by the Department include Mechanics, Wave Motion and Optics, Thermodynamics, Electromagnetic Theory, Quantum Mechanics, Mathematical Physics, Nuclear Physics, Solid State Physics, Plasma Physics, and Astrophysics. The upper-division laboratories include Wave Motion, two quarters of Electronics, a laboratory devoted to microcomputer programming and interfacing, and a special project laboratory in which the student designs and carries out a complete project involving either some aspect of instrumentation or some aspect of computational physics. The courses are all taught by active researchers in physics who have a strong commitment to teaching. The upper-division courses are generally small (ten to fifteen students).

There are regular lectures and colloquia in the Department, many of which may be of interest to undergraduate students. In addition, there are reading courses on special topics in physics.

Students interested in majoring in Physics should consult with one of the Department advisers as early as possible in their college careers to plan their programs.

Description of the Minors The Physics Department offers two minor programs for students majoring in other fields: the Physics Minor and the Instrumentation for Science Minor.

The Physics Minor program is designed to accommodate a wide variety of interests while still providing a study of the fundamentals. To fulfill the requirements of this minor, a student must take five intermediate and/or advanced courses after completing introductory physics.

The Instrumentation for Science Minor is designed to provide a student with experience in the use of common laboratory instruments, the taking and the analysis of data, and elementary skills in electronics. A major goal of the minor is to prepare the student to design and construct relatively small scale special purpose measurement instrumentation. To fulfill the requirements of the minor a student must take four intermediate and/or advanced laboratory courses after completing introductory physics.

Further information on the Minor Programs may be obtained from the Physics Department Office, Room 112, Dana Research Center.

Honors Program and Undergraduate Research

Students invited into the Honors Program may take graduate courses, reading courses, and special topics courses in the various research fields of the Department by petition. Such work occasionally leads to presentation of papers at professional meetings and to publication in professional journals.

Facilities and Research

The Physics Department is housed in the Dana Research Center, a modern, air-conditioned building which includes its own library, research laboratories, Department and student machine shops, electronics shop, conference and seminar rooms, and faculty and graduate and undergraduate student offices. The Department has its own computer facility, housing a VAX 750 computer, as well as PDP 11/24 and LSI 11/23 computers dedicated to physics research programs. In addition, a Departmental terminal cluster providing access to three VAX 11/780 units of the University Computer Center is located in the Dana Center.

In addition to the research facilities on campus, faculty and graduate students currently pursue their research at a variety of off-campus national and international facilities: high-energy physics experiments at the Stanford Linear Accelerator Center (SLAC), Palo Alto, California, at CERN, Geneva, Switzerland, and at the Fermi National Accelerator Laboratory (Fermilab), Batavia, Illinois; high-magnetic field experiments at the National Magnet Laboratory, Cambridge, Massachusetts; inelastic neutron scattering experiments at the Brookhaven National Laboratory, New York, at the Oak Ridge National Laboratory, Oak Ridge, Tennessee and at the Laue-Langevin Institute, Grenoble, France.

The Department's full-time faculty are involved in a broad spectrum of front-line experimental and theoretical programs in atomic and molecular physics, elementary particle physics, and solid state and low temperature physics. A full description of these programs may be obtained upon request to the Chairman of the Department.

Special Programs

See Independent Major, International Co-op, Marine Studies Minor, and SeaQuarter.

Social Sciences

The Social Sciences are disciplines involving the study of society as such, as well as the social behavior of individuals and groups. In contrast to the approach used in the Humanities, the Social Sciences tend to focus on objective aspects of societies. Measurement and testing, and the statistical treatment of data, play a larger role in the Social Sciences.

On the other hand, as mentioned before, this distinction is helpful only if used with caution. In the final analysis, human beings and human institutions cannot be studied without due attention to both subjective *and* objective factors. For this reason, the dividing line between Humanities and Social Sciences cannot be drawn sharply.

In the College of Arts and Sciences, the major disciplines comprising the Social Sciences are as follows:

- African-American Studies page 67
- Economics page 69
- History page 71
- Human Services* page 72
- Linguistics page 74
- Political Science page 76
- Psychology page 78
- Sociology and Anthropology page 81

* The Human Services major is offered jointly by the College of Arts and Sciences and the Boston-Bouvé College of Human Development Professions.

African-American Studies

An interdisciplinary program focusing on the black experience
Ozzie L. Edwards, Ph.D., Coordinator

Associate Professor

Holly M. Carter, Ph.D.

Assistant Professor

Jordan Gebre-Medhin, Ph.D.

Professional Preparation

Aims The African-American Studies Program at Northeastern University offers an interdisciplinary study of the black experience with two central purposes: 1) to provide academically rigorous and exciting courses for all students interested in the field, and 2) to contribute to the students' ability to develop research and analytical skills and to apply this learning, whatever their disciplines or career objectives.

By presenting fresh perspectives while remaining firmly grounded in traditional academic standards, the courses in the African-American Studies Program may aid the student in developing the skill of critical thinking, provide the opportunity to gain a meaningful, liberal arts education, and help to form a strong basis for professional or graduate work.

Students from other disciplines should find that the courses in African-American Studies are designed to complement and enrich their chosen concentrations or majors.



Description of the Major A major in African-American studies offers students the opportunity to prepare themselves for a wide range of professions calling for understanding of intergroup relations and the minority experience. Students may go on to graduate study in such areas as social work, sociology, education, law, business, history, or the humanities.

A View of the Major Students majoring in African-American Studies may earn either the Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) degree. All majors are required to take the following set of courses:

- Economic Issues in Minority Communities
- Directed Study for Senior Thesis
- Africa Today
- African-American Literature I
- Contemporary Issues in Black Society
- Black Psychological Identity
- African-American History I
- Research Seminar
- Survey of Black Political Movements
- Race Relations in America

Faculty advisers work with students to help them select electives within their chosen areas of concentration to fulfill their distribution and language requirements for the degree of Bachelor of Arts, or career package programs for the degree of Bachelor of Science.

Description of the Minor A minor in African-American Studies is designed to meet the needs of students who major in other areas but have special interest in African-American Studies. To qualify for a minor in African-American Studies, a student must earn twenty-eight quarter hours in the field, twelve of which are from the set of courses required of majors. The remaining courses will be a "concentration cluster" that is arranged in consultation with the student's faculty adviser.

Concentration Clusters A concentration cluster is comprised of a set of four courses which focus on a given aspect of African-American Studies. A cluster might focus on sociology-psychology, history, humanities, human services, research, or other areas related to the student's educational or career needs. Concentration clusters are arranged in consultation between the student and a faculty adviser.

Special Programs

See Center for Asian Studies, Independent Major, International Co-op, Urban Studies Minor, and Women's Studies Minor.

Economics

Morris A. Horowitz, Ph.D., *Professor and Chairman*

Professors

Conrad P. Caligaris, Ph.D.
Harold M. Goldstein, Ph.D.
Daryl A. Hellman, Ph.D.
Irwin L. Herrnsstadt, Ph.D.
Sungwoo Kim, Ph.D.
Gustav Schachter, Ph.D.

Associate Professors

Neil O. Alper, Ph.D.
Ernest M. DeCicco, Ph.D.
Pawan K. Sawhney, Ph.D.
Andrew M. Sum, M.A.
Gregory Wassall, Ph.D.

Assistant Professors

Bruce Bolnick, Ph.D.
Oscar Brookins, Ph.D.
Kamran N. Dadkhah, Ph.D.
Alan Dyer, Ph.D.
Barbara M. Fraumeni, Ph.D.
Jeanne K. Henn, Ph.D.
Steven A. Morrison, Ph.D.

Lecturers

Maria N. DaCosta, M.A.
Meenakshi N. Dalal, M.A.
Herbert Eskot, M.A.
Kutty Gopalan, M.A.
Paul Harrington, M.A.
Rajen Mookerjee, M.A.
Manijeh Sabi, M.A.
Frank Tortora, M.A.
Prajapati Trivedi, M.S.

Professional Preparation

Aims The Economics program offers students the opportunity to obtain a better understanding of how our economy and other economies function, to prepare themselves for graduate study in economics, and to develop specialties that may qualify them to work as economists.

Description of the Major Economics is the study of ways in which scarce resources, including human resources, are deployed to satisfy the material wants of individuals and society. Economists analyze the factors that determine the success or failure of this process.

Macroeconomics, concerned with the overall economy, deals with such problems as inflation, unemployment, growth and instability, and government monetary, fiscal, and regulatory policies. Microeconomics is concerned with the economic behavior of individuals, households, firms, and industries. It assesses the economic effects of racism, sexism, pollution, and environmental damage and analyzes the economic aspects of natural resources, poverty, health, income distribution, trade unions, and collective bargaining.

Graduates may be employed by businesses in such activities as industrial relations, planning and forecasting, determining plant locations, and making financial studies. They may become expert in analyzing consumer demand and developing and marketing new products. They may conduct research, teach, or provide specialized consulting services. In addition, federal, state, local governments, and trade unions are important sources of jobs for economists.

A baccalaureate economics degree, or graduation with a number of advanced economics courses, offers students an excellent opportunity to prepare themselves for graduate programs in economics as well as for entry into schools of law and business.

A View of the Major There is considerable flexibility in the Economics program to enable students to concentrate in areas of personal interest. A student expecting to major in the field should take the problem-oriented Principles of Economics in the freshman or sophomore year to discover the range of insights economics can offer in analyzing and solving a variety of problems. Upper-division courses apply theory to an in-depth study of a specific area of the field.

Other courses for the major include two quarters each of fundamentals of mathematics, economic statistics, and economic theory. In addition, the Department offers electives in all areas of economics, honors courses, reading courses, and a senior seminar.

The courses listed above are required for either the Bachelor of Arts or Bachelor of Science degree. However, the B.A. follows the liberal arts tradition in its distribution and language requirements—the Department of Economics requires other social science courses as well, plus six economics electives. The B.S. is a professional degree. In addition to social science electives, it requires ten economics electives and one course in quantitative methods.

The Department courses offer training in economic theory, money and banking, public finance, international trade, growth and development, industrial organization, comparative economic systems, economic history, environmental economics, economics of crime, urban problems, labor markets, collective bargaining, human resources, poverty and discrimination, and medical economics. In addition, tool courses, such as statistics, mathematical economics, econometrics, and quantitative methods are available. Other electives and readings courses permit a student to study an area in-depth.

Description of the Minor The Department also offers a minor consisting of four required courses and four electives, which are selected in consultation with a faculty adviser. Any course taken outside the Department of Economics to satisfy these minor elective requirements must be approved by a faculty adviser in the Department.

Special Programs

See London Political Internship Program, Economic Planning and Policy M.S., French for Business and Economics, Business German, Independent Major, International Co-op, Irish Studies, Russian Studies, Trent Polytechnic Institute, and Urban Studies.

History

Raymond H. Robinson, Ph.D., *Professor and Chairman*

Professors

Philip N. Backstrom, Ph.D.
Ballard C. Campbell, Ph.D.
William M. Fowler, Jr., Ph.D.
Donald M. Jacobs, Ph.D.
John D. Post, Ph.D.

Assistant Professors

Laura L. Frader, Ph.D.
Ruth-Ann M. Harris, Ph.D.
Gerald H. Herman, M.A.
Martin R. Ring, Ph.D.

Associate Professors

Charmarie J. Blaisdell, Ph.D.
Norbert L. Fullington, Ph.D.
LaVerne J. Kuhnke, Ph.D.
Clay McShane, Ph.D.
Stanley R. Stenbridge, Ph.D.

Professional Preparation

Aims History's concern with man in his diverse and complex past provides excellent opportunity for the development of greater understanding and appreciation of today's culture and civilization. Traditionally, history has been a major of great appeal to men and women desiring a broad base before they embark on careers in business, law, journalism, and government.

Other majors know that they want to work more directly in history. Some want to teach in public schools. They may elect education courses that may lead to state certification. (Those desiring jobs in private secondary schools need not be certified by state authorities.) Teaching positions in colleges and universities require master's, and increasingly doctor's, degrees. An undergraduate major in History facilitates entrance to graduate programs in the field. Ordinarily, college and university history teachers spend part of their time in research and writing.

Not all professional historians teach and write. Many find pleasure and profit working in public archives, private historical societies, museums, and restoration projects. The careers serve not only other professional historians but a larger public as well.

Description of the Major For majors of such diverse interests and ambitions, curricula must combine sensible structure with flexibility. Majors in History at Northeastern may qualify for either a Bachelor of Arts or a Bachelor of Science degree. Since the B.A. requires a foreign language, it appeals to prospective candidates for graduate school where reading knowledge of foreign languages is often necessary; the B.S. is designed for students desiring greater specialization in history and a social science orientation.

Candidates for both degrees are required to take the surveys in Western Civilization and American History, and The Historian's Craft, which focuses on methods, problems, and philosophies of historians. A later course, Approaches to History, requires students to undertake a major historical project. Elective courses cover the political, economic, social, and cultural history of man in diverse times and places.

A View of the Major To ensure a broad program of study, the College of Arts and Sciences requires that students choose courses offered by departments outside the area of the major.

The history requirements are broken into groups: Group A (Ancient, Medieval, and Early Modern Europe); Group B (Modern Europe); Group C (British North American Colonies and the United States); and Group D (Other Areas or Regions). A minimum of two courses (eight quarter hours) must be elected from each group.

Majors are also urged to avoid overspecialization at the undergraduate level. Though there are no maximum limits on the amount of history that may be taken, the Department advises broad course selection as the best policy for its majors. All majors are assigned to departmental advisers who offer counsel about the program. Students are urged to seek advice about history electives, about other electives, and about the honors program.

All qualified History majors are urged to consider the honors program in History. Those accepted write honors theses under the direction of members of the Department. Students ordinarily register the honors courses in their last three quarters of enrollment, except for the summer quarter when honors courses are not usually offered.

Description of the Minor Students interested in a minor in history should consult the History Department for information.

Special Programs

See: Center for Asian Studies, London Political Internship Program, Independent Major, International Co-op, Irish Studies, New England Quarterly, Russian Studies, Institute of Sport and Social Issues, Trent Polytechnic Institute, Urban Studies, and Women's Studies.

Human Services

An interdisciplinary major involving the College of Arts and Sciences and the Boston-Bouvé College of Human Development Professions
Wilfred E. Holton, Ph.D., Sociology/Anthropology, *Coordinator and Associate Professor*

Advisory Committee

Eva Havas, Ph.D., *Sociology/Anthropology*
John D. Herzog, Ph.D., *Foundations of Education*
Ronald J. McAllister, Ph.D., *Sociology/Anthropology*
Barbara Schram, Ed.D., *Foundations of Education*
Harold S. Zamansky, Ph.D., *Psychology*

Fieldwork Supervisor

Natalie H. Riffin, M.Ed., O.T.R.

Professional Preparation

Aims This major offers students the opportunity to prepare themselves for possible careers in one of the areas broadly defined as "human services." The program is interdisciplinary. The Human Services curriculum allows students the opportunity to obtain fundamental attitudes, knowledge, and skills that may lead to meaningful careers in the helping professions as well as to graduate education in a variety of fields.

Students who major in Human Services through the College of Arts and Sciences may prepare themselves to perform a variety of functions in public and private agencies. Through course work, two quarters of fieldwork experience, and possible co-op jobs, students have the opportunity to explore such areas as casework services in social service and welfare agencies; therapeutic treatment programs in mental health settings; supportive counseling in community health centers; rehabilitation counseling services; sheltered workshops; parole counseling; court liaison in programs for delinquent youth; staff work in halfway houses, penal institutions, and drug treatment centers; supportive counseling for the mentally retarded; community organizing; services for the aging; administration in human services agencies; and social program research and evaluation.

Description of the Major The Human Services program offers a continuing advisory system to help students make the best use of their early course selections and to guide them to appropriate upper-level courses.

College Requirements. Degree requirements differ for each participating college. Refer to pages 38 to 39 for requirements in the College of Arts and Sciences and to page 107 for requirements in the Boston-Bouvé College of Human Development Professions. Students in Arts and Sciences may take a five-year Cooperative Education Program or a four-year full-time program.

There are five basic aspects to the program as follows:

1. **Prerequisite Courses.** Prescribed courses in sociology, psychology, government, economics, and human services are required, for a total of six courses.
2. **Core Courses.** Nine courses in such areas as statistics, research methods, group process, organizations, personality, intervention strategies, and a senior seminar are required as "core" courses.
3. **Specified Electives.** Three courses in the areas of African-American Studies, special education, and/or poverty must be selected from a list of recommended options.
4. **Specialization.** Each student must take a five-course specialization developed in conjunction with an adviser. Typically, these specializations are in one of three areas: administrative, community, and clinical. Specific course choices are designed to complement the individual's interests and goals.
5. **Fieldwork.** Human Services students are required to fulfill two fieldwork placements during the last two years of their program. Each placement consists of 150 hours on site. The type of placement varies according to the student's interest. In the past, students have found placements in community programs, nursing homes, vocational workshops, state and federal agencies, and recreational facilities. These experiences are supervised by University staff to maximize the student's learning opportunity.

A View of the Major The Human Services major offers students the opportunity to obtain useful values and basic knowledge relating to various human services fields. Courses introducing some basic skills can help them to understand and work with a variety of helping services.

Human Services students at Northeastern have been very active in their major and helpful to each other. The Human Services Student Organization combines social and career-related activities, which in the past have included open houses, day-long conferences, and weekend retreats. A quarterly *Human Services Newsletter* is published by students and faculty.

For specific details on degree requirements, students should consult their Human Services advisers or the Program Coordinator in 127 Meserve Hall, 437-2624.

Special Programs

See American Sign Language, London Political Internship Program, Independent Major, International Co-op, Personality and Social Psychology Concentration, Elementary Spanish for Criminal Justice and Human Services, Trent Polytechnic Institute, Urban Studies Minor, and Women's Studies Minor.

Linguistics

An interdepartmental major

François Grosjean, Ph.D. and Doctoral d'Etat, *Professor and Coordinator, Psychology*

Professors

Harlan Lane, Ph.D. and Doctoral d'Etat, *Psychology*
Joanne Miller, Ph.D., *Psychology*

Associate Professors

Irene Fairley, Ph.D., *English*
Michael Lipton, Ph.D., *Philosophy and Religion*

Assistant Professors

John Carroll, Ph.D., *Psychology*
Ross Hall, Ph.D., *Modern Languages*
Janet Randall, Ph.D., *English*
Judy Shepard-Kegl, M.A., *Psychology*

Professional Preparation

Aims Linguistics is concerned with every aspect of language: for instance, how children learn to speak, how we understand and produce language, how language barriers keep people apart and how language ties bring them together, how language is structured and how it is represented in the brain, why some people are better at acquiring a second language than others, and how sign languages are different from spoken languages. Combined with other appropriate courses, a major in linguistics may be a useful first step in becoming, for instance, a linguist, an expert on child language, a teacher of a foreign language or of English as a second language, an interpreter, or even an expert in artificial intelligence. But above all, specializing in linguistics allows the student an opportunity to have an insight into language itself—a highly complex aspect of our everyday life that we take for granted far too readily.

Description of the Major The major in linguistics is an interdepartmental enterprise. Five departments (English, Modern Languages, Philosophy and Religion, Psychology, and Sociology/Anthropology) collaborate to offer a comprehensive program that makes use of the vast resources and talent that exist at Northeastern University in the field of linguistics. The major reflects the current research of such diverse people as linguists, sociologists, psychologists, language educators, and teachers of second languages. It is administered by a coordinator who is a member of the Psychology Department.

The major offers students a systematic introduction to modern linguistics and is broad enough to meet the needs of students interested in:

- general linguistics (phonetics and phonology, semantics, syntax, bilingualism, historical linguistics, philosophy of language, language and culture, American Sign Language);
- experimental linguistics (language and cognition, child language, neurolinguistics, psycholinguistics); and
- linguistics applied to language-related work (language teaching, language testing, language teaching materials, interpreting, literary analysis).

A View of the Major Students enrolled in the major can obtain either a Bachelor of Arts or a Bachelor of Science degree. These two degrees are in every way identical except that the second language requirement can be met with American Sign Language in the B.S. degree but not in the B.A. degree.

Besides the general college requirements, the requirements of the major include six basic courses from the main areas of linguistics: general linguistics, psycholinguistics, sociolinguistics, and applied linguistics. Students also take five additional courses in the area of their choice. These courses include, among others, Bilingualism, Child Language, Philosophy of Language, Linguistics of American Sign Language, Neurolinguistics, Transformational Grammar, Body Language, Animal Communication, Introduction to Semantics, and Symbolic Logic.

All students also take a laboratory course in which they are introduced to language research in a laboratory environment. Two advanced seminars are required as is a practicum that can take the form of fieldwork, interpreting, language teaching, or a directed study. The practicum is supervised by a faculty member who advises the student and monitors his/her progress. Advanced knowledge of a second language—spoken or sign—is required, by either taking appropriate courses or demonstrating proficiency in that language.

Combined with other appropriate courses, the program is suitable for those students interested in teaching American Sign Language. They may wish to concentrate on the applied linguistics of sign language while working on their bachelor's degree. This concentration enables students to acquire the background and the skills necessary to become professional teachers of sign language, and helps them prepare for the sign language instructor certification.

Throughout the course of study, students meet regularly with an adviser who helps them plan their course work and advises them on all aspects of the major.

Research The students enrolled in a directed-study course and in the laboratory course will take advantage of the Psychology Department's two language laboratories, which contain audio and video recording facilities and a computer for stimulus preparation, data gathering, and

statistical analysis. They will work with graduate students, research assistants, and faculty on ongoing projects related to the perception and production of spoken and sign languages.

A brochure describing the linguistics major, as well as additional information, can be obtained from Professors F. Grosjean or J. Shepard-Kegl, Department of Psychology, 282 Nightingale Hall.

Description of the Minor In addition to the major, the linguistics program offers students specializing in other disciplines a minor in linguistics. This minor is designed to give students the opportunity to broaden their field of study and to enhance their career opportunities. The minor consists of eight courses, three required courses with the remainder selected from a large set of courses offered by the program. Students minoring in linguistics are assigned a faculty adviser to help them select the courses that best suit their needs.

A brochure describing the linguistics minor, as well as additional information, can be obtained from Professors F. Grosjean or J. Shepard-Kegl, Department of Psychology, 282 Nightingale Hall.

Special Programs

See American Sign Language, English Minor, Psychology Minor, and International Co-op.

Political Science

Robert E. Gilbert, Ph.D., *Professor and Chairman*

Professors

Robert L. Cord, Ph.D.
David E. Schmitt, Ph.D.

Duane L. Grimes, M.A.
Margaret E. Leahy, Ph.D.
Bruce M. Logan, Ph.D.
Donald J. Reaves, Ph.D.
Stewart Reiser, Ph.D.
David A. Rochefort, Ph.D.

Associate Professors

L. Gerald Bursey, Ph.D.
Minton F. Goldman, Ph.D.
Eileen L. McDonagh, Ph.D.
Suzanne Ogden, Ph.D.

Assistant Professors

Stephen F. Coleman, Ph.D.
Malcolm Cross, Ph.D.

Professional Preparation

Aims Political science is concerned with the study of political institutions, the social and economic forces that shape them, the cultural context within which they operate, and human behavior in political matters.

The Department of Political Science at Northeastern University has three objectives: (1) to offer students the opportunity to obtain an education within the framework of the best liberal arts tradition; (2) to help heighten students' awareness of political forces in the environment and to sharpen their perception of their role as citizens in a democratic society; and (3) to provide the opportunity for acquiring a solid academic foundation to those who elect political science, law, or public administration as a professional career or who choose a career for which a political science background is relevant or helpful.

Description of the Major The study of political science can be the gateway to a liberal education with its benefits of broadened interests, sharpened sensibilities, and a quickened sense of civic responsibility. If you have a special interest in public affairs, studies in this field can help you prepare for government service, the study of law, the teaching of government and related subjects, or a career in politics or public management.

For the student who wishes to pursue professional studies at the graduate level, concentration in Political Science and/or Public Administration may help lead to many attractive opportunities. As in many fields, competition for positions is keen, so the student's success will depend upon such factors as academic record, experience, and personal initiative. There are some career opportunities in public management at the federal, state, and local levels of government, while positions in research are often available in government and university research bureaus. Teaching offers further career possibilities, as do specialized agencies in international bodies like the United Nations, which call for the skills of the political scientist. Individuals with specialized training in political science can compete for positions in less obvious areas: in the public-service programming of educational and commercial television, in journalism, in legislative and lobbying work and in public relations activities with private associations.

A View of the Major Students may select either the Bachelor of Arts or the Bachelor of Science degree program. Students in the B.A. program have to meet foreign language and other requirements of the College. Both degree programs (B.A. and B.S.) require four quarter hours in each of the following: Introduction to Political Science, Introduction to American Government, Foreign Governments, International Relations, Public Administration, and Political Theory, as well as twenty-four to twenty-eight quarter hours of electives in political science and six electives (twenty-four quarter hours) in the social sciences, with at least one course in at least three of the following: African-American studies, anthropology, economics, history, psychology, or sociology. The B.S. student is required to take eight hours of research methods. Courses in basic math and FORTRAN and FORGO are also recommended for B.S. students.



Public Administration

The Bachelor of Science program with a concentration in Public Administration provides a third option for the student. This program requires the completion of forty hours of such courses as Introductory Political Science, American Government, Public Administration, Public Policy Analysis, Personnel Administration, Public Budgeting, Organizational Theory, and similar courses. Students must also complete at least sixteen quarter hours of Public Administration electives. In addition, they must complete twenty-four hours of electives in the social sciences, at least eight of which should be in economics. Interested students may undertake a directed-study project based on an internship experience in a government agency, for academic credit.

Description of the Minor A minor in Political Science is also available to interested students. It entails successfully completing seven political science courses, of which at least two must be from the following: Introduction to Politics, Introduction to American Government, Introduction to International Relations, Introduction to Foreign Governments, or Public Administration.

Special Programs

See London Political Internship Program, Center for Asian Studies, Independent Major, International Co-op, Irish Studies, Russian Studies, Trent Polytechnic Institute, Urban Studies Minor, and Women's Studies Minor.

Psychology

Alexander A. Skavenski, Ph.D., *Professor and Acting Chairman*

Professors

John C. Armington, Ph.D.
François Grosjean, Ph.D., Doc.
ès Lettres
Harlan L. Lane, Ph.D., Doc.
ès Lettres
Helen S. Mahut, Ph.D.
Joanne Miller, Ph.D.
Bertram Scharf, Ph.D.
Murray Sidman, Ph.D.
Michael Terman, Ph.D.
Harold S. Zamansky, Ph.D.

Assistant Professors

John Carroll, M.A.
Adam Reeves, Ph.D.
Judy Shepard-Kegl, M.A.

Clinical Associate Professor

Karen Geelen, Ph.D.

Adjunct Associate Professor

Lawrence Stoddard, Ph.D.

Associate Professors

Edward A. Arees, Ph.D.
Martin L. Block, Ph.D.
Roger Brightbill, Ph.D.
Perrin S. Cohen, Ph.D.
Stephen Harkins, Ph.D.
Charles Karis, Ph.D.
Harry Mackay, Ph.D.

Professional Preparation

Aims Modern psychology may be broadly defined as a science that examines what people and other organisms do as well as how and why they behave as they do. Psychology is also an interdisciplinary science that depends heavily on the methods and much of the knowledge derived from the other sciences. With these considerations in mind, the undergraduate curriculum offers students the opportunity to develop a sound foundation in the scientific underpinnings of modern psychology to prepare them for a diversity of careers in teaching, research, public service and professional practice.

Description of the Major Our courses offer the opportunity to students for preparation to enter a variety of work settings in which in-service specialty training is ordinarily offered (e.g., community mental health centers, vocational rehabilitation offices, and correctional programs) or to enter advanced training in such graduate programs as psychology, life science, or any of the health professions and medical specialties.

The Psychology curriculum explores many topics, such as the function of the brain in determining behavior; how we see, hear, and learn; what behavioral science can offer in the problem areas of mental retardation,

personality problems, infancy, and old age; and how we might suggest social changes based on laboratory data to increase men's and women's accomplishments and satisfactions in the modern world. In addition the curriculum offers opportunities for laboratory practice and experimentation, field experiences in behavior technology, and small-group seminars to encourage critical and creative evaluation of psychology's accomplishments and its future.

A View of the Major The Department offers both a Bachelor of Arts and a Bachelor of Science degree. The B.S. degree is usually recommended for students with a strong scientific or professional interest who ultimately may consider applying to graduate schools in psychology or environmental science. In addition, the Department offers a special B.S. program for Psychology majors who wish to prepare for application to health professions schools. Since modern psychology is multidisciplinary, the B.A. and B.S. programs both include distribution requirements in allied sciences to fulfill the need for wide exposure to varying techniques of scientific practice and interpretation.

With the science courses and elementary psychology courses as foundations, students in the B.A. and B.S. programs may either pursue a general course of study in psychology or choose one of four major areas for concentration: Language and Cognition, Learning and Behavioral Analysis, Personality and Social, or Sensory and Neuropsychology. The curricula for the areas of concentration have been structured so that the student often takes courses not only in psychology, but also in related disciplines. For example, a student concentrating in Personality and Social takes courses in sociology, anthropology, and speech and drama. The student's final choice of concentration should be made only after personal consultation with his or her Psychology Department adviser.

Within each of the four concentrations, the student is expected to progress through a sequence of specialty courses, laboratory courses, and a seminar. The student is thus afforded the opportunity to explore a given area of psychology in depth, as well as to acquire an overview of the broader issues in psychology. Furthermore, all B.S. students and qualified B.A. students participate in the Department's Directed Studies Program, in which, under the direction of a faculty member, they engage in research projects in various laboratories in the Department. In this way, classroom learning is complemented by laboratory research, where the student may learn by doing.

Description of the Minor Each student is required to take at least eight psychology courses, including the introductory psychology sequence, intermediate specialty courses, and at least one laboratory course. The minor program itself is quite flexible, designed for students with a broad range of interests and career goals. Students may choose either to distribute the eight psychology courses over a broad range of areas or to focus on one of the four areas corresponding to the major concentrations: Language and Cognition, Learning and Behavior Modification, Personality and Social, and Sensory and Neuropsychology. Students are assigned faculty advisers in the Department to help them select the minor program that best suits their needs.

Topics in Psychology Series (TIPS)

As well as offering courses designed primarily for psychology majors, the Department also offers a variety of courses without prerequisites that are addressed to specific topics of broad current interest. Examples include Psychological Testing, Marriage and the Family, Body Language, Sexual Behavior, Psychology and the Law, Animal Communication, Man in Isolation, Memory and Remembering, and The Young Offender.

Research Laboratories

The student who enrolls in laboratory courses and directed-study courses will take advantage of the Department's resources for research, which include: (a) in the field of learning, behavior laboratories for research with humans, monkeys, rats, and pigeons; and, in collaboration with the Walter E. Fernald State School, an instructional setting for research and training in behavior modification with retarded children and adults; (b) in neuropsychology and ethology, primate and rodent surgeries in neuroanatomical and histological laboratories, with apparatus for stimulating and recording activities of the brain; (c) in the psychology of vision and hearing, specialized enclosures and equipment for presenting visual and auditory stimuli and for measuring responses of the eye and the ear, including on-line computers; (d) in language and cognition, audio and video recording facilities and a computer for control of stimulus and response variables; and (e) in the field of personality, dark-rooms, tachistoscopes, and an eye-movement camera.

Special Programs

See American Sign Language, Independent Major, International Co-op, Linguistics Minor, Personality and Social Psychology Concentration, Combined Program with Professional Schools, Institute of Sport and Social Issues, and Women's Studies Minor.

Sociology and Anthropology

Carol A. Owen, Ph.D., *Associate Professor and Chair*

Professors

Morris Freilich, Ph.D.
Elliott A. Krause, Ph.D.
Jack Levin, Ph.D.
Morton Rubin, Ph.D.
Earl Rubington, Ph.D.

Associate Professors

Arnold Arluke, Ph.D.
Richard Bourne, Ph.D.
M. Patricia Golden, Ph.D.
Wilfred E. Holton, Ph.D.
Debra R. Kaufman, Ph.D.
Thomas H. Koenig, Ph.D.
Ronald J. McAllister, Ph.D.

Assistant Professors

Winifred Breines, Ph.D.
Paul C. Creelan, Ph.D.
C. Paul Dredge, Ph.D.
Eva C. Havas, Ph.D.
Maureen Kelleher, Ph.D.
Alan M. Klein, Ph.D.
Bruce K. MacMurray, Ph.D.
Judith Perrole, Ph.D.
Michael Rustad, Ph.D.
Thomas M. Shapiro, Ph.D.
Carmen J. Sirianni, Ph.D.

Professional Preparation

Aims The disciplines of sociology and anthropology apply a critical perspective to the study of social arrangements in which human beings live and die. Systematic research methods and theory are brought to bear on how societies function and change, and on how individuals, groups, and institutions interact. Applications are made to such areas as social policy, criminology, medical and mental health issues, and business issues.

Description of the Major A major in this Department offers background preparation and preprofessional training for a wide spectrum of careers in public or private service and research. Students may wish to pursue graduate study in sociology, anthropology, or social psychology. For those pursuing graduate, professional training (e.g. law, social work, and public administration), sociology and anthropology also provide a good background.

Students may concentrate in sociology or anthropology or both. Students who wish to study both must design their own programs, with the help of an adviser. Those enrolled in premedical, prelegal, paramedical, or a variety of other preprofessional programs should find that sociology and anthropology courses can offer a useful background.

A View of the Major Majors may follow either a four-year full-time program or a five-year cooperative course of study. Cooperative work assignments vary from placement in mental hospitals and social agencies to placement in university, government, and other research and policy-making settings. Transfer between the five-year co-op program and the four-year full-time program is possible, and registration in either is not an irreversible decision.

The Department offers both a Bachelor of Arts and a Bachelor of Science degree. The requirements for each degree, both in sociology and in anthropology, are outlined below. A student with specific goals may, of course, take more departmental electives than are required. B.A. students may wish to look at the concentration requirements for B.S. students and consult their advisers for assistance in planning programs with specialized goals.

The Department offers a B.S. with concentrations in anthropology or sociology. Students selecting this option must fulfill all the major requirements set by the Department for the B.A. degree and must take a coherent program involving additional course work as outlined below. Specializations are interdisciplinary and involve more intensive study within a concentration.

Description of the Minor in Sociology In addition to the major program, the Department also offers students majoring in other disciplines the opportunity to take a minor in Sociology. The minor program consists of the following:

- A. Introduction to Sociology
- B. Two courses from among
 - Research Methods I
 - Research Methods II
 - Classical Social Thought
 - Current Social Thought
- C. Any three-course specialization in sociology arranged between the student and the adviser.

Description of the Minor in Anthropology In addition to its major program, the Department also offers students majoring in other disciplines the opportunity to take a minor in Anthropology. The minor program consists of the following:

- A. Introduction to Social Anthropology
- B. Language and Culture
 - Individual and Culture
 - Sex, Sex Roles, and Family
- C. Any two-course specialization in Anthropology arranged between the student and adviser.

For other minors see Special Programs, page 86.

Anthropology

B.A. students in Anthropology must take at least forty-eight quarter hours in departmental courses, including forty in anthropology and eight in sociology. The exact distribution can be arranged. Minimum requirements are as follows:

- A. Preparatory—Introduction to Anthropology and Introduction to Sociology. (Prospective majors with equivalent background may be exempted. Students should consult a departmental adviser.)
- B. Core Requirements—at least three of the following, as available: Language and Culture; Individual and Culture; Human Origins; Anthropology of Religion; Sex, Sex Roles, and Family; and Archaeology.
- C. Electives—Students must take at least six additional electives in anthropology and at least one additional elective in sociology. Qualified students are encouraged to take relevant graduate courses with the consent of the instructor. Majors should freely consult their advisers since courses elsewhere in the University may round out a special interest or focus.
- D. Nondepartmental Requirements—Six courses from the following social sciences: African-American studies, economics, history, political science, and psychology.

B.S. students in Anthropology take the same basic core of courses and, in addition, an individually designed specialization in an area of interest consisting of at least five courses. Students *must* confer with an adviser who will help develop such a program, place it on record, and supervise it. Interdepartmental and interdisciplinary specializations can be arranged in such areas as linguistics, Native American studies, biological anthropology, psychological anthropology, or area studies focusing on Latin America, Africa, Asia, or the Middle East.

Sociology

B.A. students in Sociology must take at least fifty-two quarter hours in departmental courses, including forty-four in sociology and eight in anthropology, and must meet the following minimum requirements:

- A. Preparatory—Introduction to Anthropology and Introduction to Sociology. (Prospective majors with equivalent background may be exempted. Students must check with the Department.)
- B. Core Requirements—Statistical Analysis; Research Methods I; Research Methods II; Classical Social Thought; Current Social Thought; Class, Power, and Social Change.
- C. Electives—The following are minimum requirements: two intermediate courses, two advanced courses, and one intermediate or advanced anthropology course. With the adviser's consent, qualified students are encouraged to take certain graduate and directed-study courses and/or the Senior Majors Seminar.
- D. Nondepartmental Requirements—Six courses from the following social sciences: African-American studies, economics, history, political science, and psychology.

B.S. students in sociology take the same basic core of courses and, in addition, an individually designed specialization in an area of interest consisting of at least six courses, some from within and some from offerings outside the Department. Students *must* confer with an adviser who will help develop such a program, place it on record, and supervise it. It is possible to arrange specializations focusing on social welfare, health services, political studies, urban studies, education and society, ethnic studies, and organizational studies. There are, of course, many other areas of specialization and possible combinations of courses. The following offer a few examples (courses in the Department of Sociology/Anthropology are indicated by an asterisk):

Social Welfare

- *Sociology of Poverty
- *Social Policy and Social Intervention
- *Sociology of Human Service Organization
- *Private and Public Assistance
- The Welfare System in America
- Income Inequalities and Discrimination
- Politics of Poverty

Health Services

- *Medical Sociology
- *Death and Dying
- *Health Care as a Social Issue
- *Culture and Mental Illness
- *Aging and Society
- *Sociology of Mental Health
- Medicine, Religion, and the Healer's Art

Medical Economics
Community Medicine and Health-Care Delivery
Human Services Administration

Urban Studies (Contact the College of Arts and Sciences for information on the Urban Studies interdisciplinary minor.)

- *Cities and Society
- *Community Analysis
- *Suburb and Metropolis
- *Seminar in Urban Studies
- Urban Politics
- Urban Economics
- The Economics of Urban Poverty
- American Urban History
- Architecture and the City

Law and Society

- *Law, Crime, and Social Justice
- *Sociological Theories of Crime
- *Social Policy and Social Intervention
- Civil Liberties
- Law and Society
- The Economics of Crime
- The Politics of the Criminal Justice System

Occupations and Professions

- *Occupations and Professions
- *Sociology of Work
- *Social Roles in the Business World
- *Medical Sociology
- Labor Market Economics
- History of the Professions

Sex Roles and Family

- *Sex, Sex Roles, and Family
- *Sociology of the Family
- *Kinship and Society
- *Sex-Gender Roles in a Changing Society
- *Violence in the Family
- Sex Roles in American Politics
- Women in Modern Europe
- The Black Family

Organizational Studies

- *Sociology of Business and Industry
- *Sociology of Work
- *Administration and Formal Organization
- *Social Policy and Social Intervention
- *Social Roles in the Business World
- *Human Services Organization
- Organization Theory
- People in Organizations

Deviance

- *Social Deviance
- *Drugs and Society
- *Sociology of Alcoholism
- *Juvenile Delinquency

- *Sociological Theories of Crime
- The Disordered Mind
- Abnormal Psychology I, II
- The Female Offender

Social Psychology

- *Social Psychology (Sociology, Psychology Departments)
- *Anthropology of Aggression
- *Group Behavior I, II
- *Seminar Soc. Psych.
- Personality
- Psychology Lab. Soc. Psych.
- Psychology Lab. Personality

Popular Culture and Mass Communication

- *Mass Communication and Public Opinion
- *Collective Behavior
- *Leisure, Sport, and Society
- *The Sociology of Everyday Life
- History of Media in America
- The Automobile in America
- Survey of African-American Music
- Popular Culture

**Departmental Course*

These are samples of approaches to particular areas; there are many other possible combinations of courses as well as many other areas of specialization.

Special Programs

Center for Asian Studies, International Co-op Experience, Personality and Social Psychology, Russian Studies, Trent Polytechnic Exchange Program, Urban studies, Women's Studies.

Special Programs in the College of Arts and Sciences

Reflecting the awareness that ideas, fields of study, and interests do not always fall into traditional, neatly compartmentalized units, the College of Arts and Sciences makes a wide variety of special programs available to its students. Field-study programs, international work/study opportunities, interdisciplinary majors and minors, involvement with professionals—all are among the options available to students who meet the program eligibility requirements. Students who participate in these programs should find their educational experience at Northeastern greatly enhanced. Detailed information about these programs is available from involved departments and the Dean's Office.

Minors

The College of Arts and Sciences offers to all upperclass students in the College of Arts and Sciences, as well as in other colleges in the University several choices of minors. Below is a list of all those minors. Descriptions of those that are offered through one department are found in the section of this publication for that department; descriptions of interdisciplinary minors, those indicated with an asterisk, are found in this Special Programs section.

African-American Studies
 Anthropology
 Art
 Biology
 Chemistry
 Economics
 English (with options in Literature, Expository and Creative Writing, and Technical Communication)
 Geology
 History
 Instrumentation for Science
 Linguistics
 Marine Studies*
 Modern Language (with options in French, Spanish, German, Russian, and Italian)
 Media Studies*
 Music
 Philosophy
 Physics
 Political Science
 Psychology (with options in General, Language and Cognition, Learning and Behavior Modification, Personality and Social, Sensory and Neuropsychology)
 Russian Studies*
 Sociology
 Speech Communication
 Technical Communication*
 Theatre
 Urban Studies*
 Women's Studies*

The Center for Asian Studies

The Center for Asian Studies was established to encourage, develop, and promote teaching and research on Asian life, and educational and cultural exchange of students and scholars. The Center develops and supports multidisciplinary academic programs, courses, and research that focus on individual Asian countries, the region as a whole, or specific issues applicable to Asian life, such as Asian political processes or family life in Japan. The Center's goal is to foster a deeper understanding of Asian societies and cultures through (1) support for scholarly research, faculty, and visiting scholars; (2) the development and teaching of graduate and undergraduate courses to develop academic and professional interest; and (3) the acquisition, publication, and dissemination of research findings on topics selected to advance scholarship and knowledge about Asia.

The Center also encourages and sponsors seminars, symposia, and conferences on related issues. The proposed Asian Studies Minor will draw together studies in the departments of Art, History, Modern Languages, Philosophy/Religion, Political Science, and Sociology/Anthropology. Course offerings include history, language, philosophy and religion, political science, sociology, and anthropology.

American Sign Language

American Sign Language (ASL) is the primary language used by the Deaf community in the United States and parts of Canada. A language expressed through gesture and perceived visually, ASL is not patterned after, nor derived from, English or any other spoken language—it is entirely different. Having its own means of expression, wit, poetry, and rich folklore, ASL reflects the thoughts, cultural values, and experiences of Deaf people. A knowledge of ASL is one prerequisite for acceptance into the Deaf community; it is essential for those who have a personal or professional interest in interacting with Deaf individuals.

The Northeastern University Sign Language Programs, affiliated with the Department of Modern Languages, offers both day and evening courses in ASL conversation and interpretation. Courses in the structure of ASL, Deaf culture, Deaf history, and sign language teaching are also among the programs offered. The content of the conversation courses is designed to include features typically found in second-language curricula: vocabulary, grammatical structure, and the culture of the target language group. A segment of each course provides an opportunity for students to interact directly with Deaf people, observe ASL in use, and practice their signing skills. The program also makes use of instructional media for individualized practice on receptive skills and vocabulary review.

Through the interpreting courses and programs offered, students may prepare themselves for certification through the National Registry of Interpreters for the Deaf.

Interpreter Training During the summer, Sign Language Programs offers intensive training opportunities for beginning sign language interpreters. The Summer Program for the Training of Sign Language Interpreters is a rigorous introduction to the field of inter-cultural communication between Deaf and hearing people. Among the theoretical and practical content areas addressed in the course are consecutive and simultaneous interpretation, ethics and interpreter role, public speaking, and interpretation for special populations and in special settings. Applicants must provide evidence of proficiency in English and ASL, as well as extensive experience in the Deaf community.



Sign Language Teacher Training As the New England regional training program under the National Association of the Deaf National Consortium of Programs for the Training of Sign Language Instructors, Northeastern University offers programs to train teachers of ASL. The Summer Program for the Training of Sign Language Instructors offers an intensive introduction to the professional teaching of ASL as a second language. It is designed for current and prospective teachers who are already fluent in ASL.

Visiting Students Program Northeastern also offers programs at both the undergraduate and graduate levels for students who wish to visit the University and become involved in an intensive exposure to ASL linguistics. These students have the opportunity to take courses in linguistics and ASL, as well as participate in directed studies through which they may take part in ongoing ASL research projects in the Language and Cognition Laboratory of the Psychology Department.

Boston Architectural Center Affiliation

Northeastern University students wishing to take courses at the Boston Architectural Center (BAC) may do so through the affiliation between the BAC and the University's Department of Art and Architecture.

The BAC is one of the country's oldest and most respected architectural schools. It is a nationally recognized leader in providing full-time concurrent work-study opportunities for those interested in careers as practicing architects. Besides being an independent fully accredited degree-granting institution, it is the home of the Boston Society of Architects. As such, it serves as a principal focus for a variety of professional activities in the New England area.

The BAC is conveniently located within a short walking distance of the University's Huntington Avenue campus. The NU/BAC affiliation provides choices of courses at either location, with day classroom courses mainly at the University and evening classroom and studio courses at the Center. For studio courses, the Art and Architecture Department's course 27.205, Introduction to Architectural Design (or equivalent) is a prerequisite.

Interested individuals should contact the program coordinator in the Department of Art and Architecture, Professor Peter Serenyi, 401 Rugles Hall.

Boston Lyric Opera

The Boston Lyric Opera is a professional opera company dedicated to providing performance opportunities for New England singers, directors, and designers. The company performs an annual season of fully staged opera productions. The Boston Lyric Opera presents all its performances at the University's Alumni Auditorium. The Company's director brings his knowledge and experience in the opera world as an adjunct lecturer in the Department of Music.

East/West Coastal Studies Program

The Atlantic and Pacific coasts and the Caribbean provide the settings for a year-long comparative study of the physical, biological, and sociological aspects of three very different coastal regions. Northeastern and other students enrolled in the East/West Coastal Studies Program have the opportunity to leave the confines of the traditional campus to experience firsthand the excitement of life at sea and in different cultures.



Also offered in Rome during the year are courses that are conducted in Italian and are taught by teams of Northeastern and CNR professors. Simultaneous translation is provided for those who do not speak Italian. Two weeks in duration, the courses consist of more contact hours than similar courses taught on the domestic campus and are a rigorous blend

of theory and practical application. Participants are generally sponsored by their employers in government and industry from throughout Italy.

School for Field Studies

The College of Arts and Sciences is affiliated with the School for Field Studies (SFS), a nonprofit educational organization that offers one- and two-month field study expeditions throughout the world. Semester programs are being planned on Wildlife Management, Athi Plains, Kenya, and on Coral Reef Ecology, St. John, U.S. Virgin Islands. Programs combine applied academics with training in field research methods and teamwork—an exciting hands-on approach to science. Credit is granted for the coursework. Students of all levels and disciplines are eligible, but participation of Northeastern University students is limited proportionate to the total number of outside participants in the SFS program. Additional information may be obtained in the Arts and Sciences Dean's Office.

Division of Fine Arts



The Division of Fine Arts coordinates the University's academic and performing arts activities. Comprising the departments of Art and Architecture, Theatre and Dance, and Music, the Division was established in 1981 to enrich and expand the role of the arts at Northeastern. The Division develops arts curricula through the support of existing programs, creates interdisciplinary courses to provide a forum for intellectual stimulation and professional development, and generates programming in both traditional and experimental art forms.

As the producer of professional arts events at Northeastern, the Division offers a broad range of programs in film, music, dance, literary arts, visual arts, theatre, and performance art. A year-round schedule of events for both University and Boston audiences includes gallery shows, dance performances, artistic residencies, concert series, and theatrical presentations.

To fulfill its role as an arts service organization, the Division administers an on-campus professional box office, a corridor art gallery, and an arts publications program. The Central Box Office in 105 Ell Building provides tickets to all University-sponsored arts events as well as passes and discount tickets to area museums, theatres, and arts organizations. The Division's publications include the *NuArts Calendar*, a quarterly preview of events; *NEW MUSIC-BOSTON*, a contemporary music listing for the Boston area; and numerous programs, brochures, and catalogs. A new arts magazine will begin publication in 1984 with features on the activities and accomplishments of the Division and its constituent departments.

Affiliations with local and national arts groups enable the Division to expand and strengthen the scope of arts activities at Northeastern. The Boston Lyric Opera, the Concert Arts Orchestra of Boston, and the Boston chapter of the League of Composers—International Society For Contemporary Music work through the Division's auspices to produce full seasons of performances.

To ensure that the arts remain an important and vital part of the University and its community, the Northeastern University Division of Fine Arts encourages both academic excellence and professional achievement. By sponsoring new works commissioning programs, by presenting important emerging artists, and by incorporating contemporary notions of the role of the artist in society, the Division of Fine Arts maintains an important position in the cultural and educational life of this modern urban university.

French for Business and Economics Students

Elementary French for Business and Economics students is designed for students who wish to study French with the intent of enhancing their career opportunities. The program is particularly aimed for students interested in international business. It offers, along with a thorough study of grammar and insights into the French way of life, some specialized vocabulary related to the business world and an immediate introduction to French business texts. The course serves as a preliminary step for the student wishing to gain co-op placement in France. Additional information may be obtained from Juliette Gilman in 326 Holmes Hall.

Business German

This course taught in English is designed for students of business and economics seeking to develop competence in the reading and understanding of texts produced by the German business community and trade media. Course goals include

1. a working knowledge of grammatical structures and terminologies used in business writings;
2. development of effective comprehension procedures used by professionals for efficient reading;
3. introduction to the Federal Republic of Germany, its industrial geography, trade relations with the United States, and its role as a major partner in international commerce.

Readings from English-language trade publications assure a steady influx of outside information and serve as the basis for weekly summary assignments designed to upgrade student's writing skills.

Students may use this course as a pre-stage to the conversation-based German offerings if speaking competence is needed for a business-oriented co-op in Germany (see International Cooperative Education) as part of Northeastern's exchange program. Additional information may be obtained from Ross Hall in the Modern Languages Department.

Minor in Business

The College of Business Administration, in collaboration with the College of Arts and Sciences, offers a minor in Business for all students outside the College of Business Administration. This minor may be valuable to students seeking jobs both before and after graduation, in either the public or the private sector.

The courses in the minor cover substantially the areas of business required by the American Assembly of Collegiate Schools of Business as part of the relevant "common body of knowledge."

The business courses included (with one exception, Accounting) are the same as those taken by all students in the College of Business Administration. Thus, the minor should encourage a cross-fertilization of ideas that will be beneficial to both CBA and non-CBA students.

For details, including full requirements and program admission standards, interested persons should consult the Dean's Office of the College of Arts and Sciences or the Undergraduate Programs Office of the College of Business Administration.

Center for Humanities

The Center for the Humanities at Northeastern University supports teaching and research activities in cross-disciplinary areas that connect the traditional humanities with science and mathematics, and with such

professional curricula as engineering, business, criminal justice, and allied health. Though it offers no courses, the Center promotes the application of human-values perspectives and problem-solving techniques to the professions in various conferences, workshops, and presentations. The Center is located in 443 Meserve Hall.

Independent Major

After their second quarter, students may petition the Dean of the College that they meet the requirements for the Bachelor of Arts degree as independent rather than departmental majors. The independent major must center on a discipline or combination of disciplines in the arts and/or sciences.

A faculty member acting as the student's academic adviser initially reviews the program, which must meet all College requirements. The program is then submitted to the appropriate committee for final approval. Requirements and procedures for the major should be discussed in advance with an academic adviser in the dean's office.

International Cooperative Experience

Northeastern extends its unique program of Cooperative Education to the international scene by offering qualified upperclass students the opportunity for suitable international placement. This program operates on an exchange basis in cooperation with overseas institutions and sponsoring agencies. Students whose academic, linguistic, and professional experience make them attractive candidates for overseas positions may work in Great Britain, Sweden, Ireland, Canada and the French and German-speaking countries of Europe. By creating a mutually beneficial situation for students and employers, the program helps to meet an increasing need for qualified professionals who possess international expertise and language proficiency necessary to assist companies in expanding their overseas markets. Students may obtain detailed information about the program from the Department of Modern Languages or the International Cooperative Education Office, 500 Stearns Center.

Irish Studies

The Irish Studies Program promotes Irish Studies at Northeastern University through expansion of the curriculum, cultural programs on Ireland and Irish-Americans, and co-operative exchanges of Irish and American students for work and study. The Distinguished Speakers Series presents opportunities for University faculty and staff to develop mutually beneficial relationships with Irish counterparts in all disciplines. The committee has encouraged cooperation with all departments of the University.

Through International Co-op, students are placed in various businesses and agencies in the Republic of Ireland and in Northern Ireland. The Working Papers in Irish Studies Series provides an opportunity to disseminate manuscripts of current interest. Cultural efforts include a film series, development of a library collection, and art exhibitions, as well as student activities in the Irish Student Club. Plans to develop an Interdisciplinary Minor are underway. Dr. Ruth-Ann Harris, Department of History, and Dr. Bruce Logan, Department of Political Science, serve as coordinators of Irish Studies.

League of Composers— International Society for Contemporary Music

Northeastern University is the home of the Boston chapter of the League of Composers—International Society for Contemporary Music, one of the oldest and most prestigious international organizations dedicated to the promulgation of new music. With chapters in more than forty countries and with a membership that has included Schönberg, Stravinsky, Bartók, and Ravel, the League—ISCM has introduced to the public, works of some of the most important composers of the twentieth century. Under the direction of Professor Dennis Miller of the Northeastern Music Department and through the auspices of the Division of Fine Arts, the League's activities at Northeastern include the presentation of an annual concert series featuring the finest interpreters of the contemporary idiom, sponsorship of a new-works commissioning program, production of *NEW MUSIC—BOSTON*, a calendar listing of Boston new music activities, and publication of a series of monographs by noted contemporary composers and scholars of new music.

Linguistics Minor

In collaboration with four other departments—English, Modern Languages, Philosophy and Religion, and Sociology/Anthropology—the Psychology Department offers the Linguistics Minor, which reflects the current research of such diverse people as linguists, sociologists, psychologists, language educators, speech pathologists, neurologists, and teachers of second languages. The minor in Linguistics complements the study of any other language-related area such as computer science, anthropology, brain physiology, or language teaching. Specialized concentrations within linguistics include psycholinguistics, stylistics, language and culture, second language teaching and applied linguistics, theoretical linguistics, and American Sign Language linguistics. Many research opportunities exist through directed work study.

London Political Internship Program

The Political Science Department and the London Political and Governmental Education Studies (PAGES) Group have joined together to offer American university students the opportunity to learn and gain working experience at the very heart of British politics as part of their study abroad program.

Special emphasis in this program is given to the theory and practice of elections and the workings of two great but very different institutions: the British Parliament and the European Parliament. In addition to taking two twelve-week lecture courses in British Government, students will be fully involved, through an internship, working with Members of Parliament, candidates, and campaign organizers, or constituency agents as they are known in Britain. Internship assignments vary from session to session, but have included assignments with current and former prime ministers. One half-price scholarship is available to a Northeastern University student each year. Up to sixteen credits may be earned in the three-month program. Application and eligibility information is available from the Department of Political Science.

Marine Studies Minor

The Marine Studies minor reflects the educational resources and maritime heritage of New England and offers the undergraduate student the opportunity for an unusual focus in a liberal arts education. Study of the oceans, like approaches to other intellectual frontiers, demands an integrated interdisciplinary approach. The Marine Studies minor is structured to allow a primary, although not exclusive, emphasis on either the scientific or the social science/humanistic study of the oceans. Some physical interaction with the sea is required through demonstrated achievement in a specific marine-related skill such as scuba diving, sailing, or piloting/navigation. The minor is not the principal preparation for employment in marine related positions but rather an opportunity to enrich a liberal education. Full information is available from the Director of the Center for Marine Science and Maritime Studies.

Media Studies

We live in a media-oriented society in which political outcomes and social values are affected, if not determined, by the mass media. Students who pursue the Media Studies Minor examine the media from a number of perspectives. Media Studies courses are selected from the departments of Political Science, Music, Speech Communication, Journalism, Art, Drama, History, and English. Each student satisfies requirements in the background and theory of Mass Media and then completes the program by selecting courses in the areas of Media Production and Media Application. The program is considered a strong complement to majors in a variety of fields given the impact of mass mediated messages on contemporary organizations and society in general.

Personality and Social Psychology

The Departments of Psychology and Sociology/Anthropology have combined their resources to offer students a new interdisciplinary specialization that can be pursued for a degree in either of these academic departments.

The specialization in Personality and Social Psychology offers students the opportunity to acquire a systematic understanding of various life processes, such as childrearing, aggression, anxiety, prejudice, attitude formation and change, moral development, and psychopathology. It includes studies of attraction and love, conformity, formation of identity, helping behavior, morality, and other related topics.

Students pursuing an interdisciplinary specialization take courses in both the Psychology and Sociology/Anthropology Departments. However, the student may select the department in which the specialization will be pursued.

In making this selection, the student should consider how each department differs in methods and level of analysis. These differences as well as various course offerings are outlined in a brochure titled *A New Specialization: Personality and Social Psychology*, which can be obtained by writing to the Department of Psychology (234 Nightingale Hall) or the Department of Sociology/Anthropology (500 Holmes Hall). Also, prospective students should discuss their potential department affiliations with Professors Golden or Levin (Sociology/Anthropology) and Professors Harkins or Zamansky (Psychology). (This is an interdisciplinary program that is separate from the Social Psychology specialization outlined on page 86.)

Combined Program with Professional Schools

Students who have completed at least three-fourths of the course work required for a baccalaureate degree in the College of Arts and Sciences and are accepted into an approved professional school of dentistry, law, medicine, optometry, osteopathy, or veterinary medicine will be eligible for the Bachelor of Arts or Bachelor of Science degree at the end of their second year in professional school. At least two-thirds of work for the baccalaureate degree must be earned in residence at Northeastern, and all other College of Arts and Sciences requirements must be fulfilled, the residence requirement having been completed prior to entrance into the professional school. Under this program, a preprofessional student may reduce by one year the time normally required for obtaining both the undergraduate and professional degrees.

Russian Studies Minor

The Russian Studies Minor is an interdisciplinary program which provides students with an opportunity to develop a broad understanding of an important area by studying its language, society, history, economy, culture, and behavior. The program attempts to help students become knowledgeable about an important culture that generally receives quite limited treatment in secondary schools. The minor may help to prepare students for further graduate study in specialized areas such as government, teaching, journalism, and business, and may provide the beginnings of such specialized knowledge that will enhance students' career opportunities in the absence of graduate study in the aforementioned employment fields.

SeaQuarter

SeaQuarter is a liberal arts program which provides the responsibility of operating and crewing a large U.S. flag schooner, the *Harvey Gamage*, on journeys along the Eastern seaboard and through the Caribbean Sea. The SeaQuarter itinerary includes ports-of-call from Maine to the Caribbean at research institutions, museums, and historical and scientific sites. Confrontation with the physical presence of the Atlantic coast provides the insights and experiences that cannot be projected with comparable intensity from a textbook or classroom ashore. SeaQuarter offers an environment where learning is interwoven with mutual dependence for survival, where each individual can find and challenge the limits of her/his capabilities. The set of courses provides a broad academic exposure to the sea and the impact of the sea on civilization in the artistic, social, and scientific sense. Participants take a full load of courses in addition to helping crew the 110-foot ship. SeaQuarter is available to both nonscience and science students of at least sophomore status. Full information is available from the Center for Marine Science and Maritime Studies.

Elementary Spanish for Criminal Justice and Human Service Majors

This course is intended for students majoring in Criminal Justice or Human Services who will need to use Spanish in police work and in social service settings. The grammar taught is the same as in other elementary Spanish courses. The vocabulary is adapted in particular needs and interests of the students. Role-play is used extensively and students practice "intake interviews" in the course.

Technical Communication Minor

Technical Communication combines written, oral, and graphics skills with a background in science or technology. The minor in Technical Communication helps students prepare for careers as technical writers, or for careers in which technical communication is a significant part of their jobs. Students in English or other liberal arts studies may elect the minor, as may students from a variety of technological or scientific fields.

Trent Polytechnic Exchange Program

The Trent program presents an opportunity for upperclass Northeastern students to study theory and practice of social and human services in the United Kingdom. Students participate in an academic term at Trent Polytechnic in Nottingham, England, and an additional six-month cooperative experience in appropriate institutions and organizations.

Students study the development of contemporary British social structure, its institutions and strategies to deal with modern social problems. Their assignment to a specific institution offers a chance for firsthand observations of a particular social or human service.

Trent is the largest practitioner of cooperative education in the United Kingdom. Community Service Volunteers (CSV), an organization comparable to our VISTA, places students for the cooperative period. CSV is an educational charity which involves young people in full-time community service work throughout Great Britain (for example, diagnostic centers, schools for emotionally disturbed children, or social service departments in local communities).

These two organizations provide a unique and challenging program for Northeastern students who qualify academically. The program can accommodate twenty to thirty students. Interested students should contact the Department of Sociology and Anthropology or the International Cooperative Education Office.

Urban Studies Minor

The Urban Studies minor offers courses with an urban orientation in four main areas: (1) urban problems and policies; (2) urban form and design; (3) African-American studies; and (4) urban humanities. The minor may be useful for the student who majors in one of the social sciences (history, economics, political science) as well as the student with a career orientation towards political science or business administration in urban areas. The minor presents the opportunity to study the approach of different disciplines to solve the same set of urban problems. Studying the viewpoint of artists, minorities, economists, and others, the student is given the chance to develop a broader perspective on the identity of urban areas. Like an art appreciation course, the minor provides background information and criteria for appreciation of the urban environment. Students may contact any one of the participating departments or the Dean's Office for additional information.

Women's Studies Minor

Men and women today face the challenge of combining family and career. Other important challenges include the changing position of women in society and changing sex roles in general. The Women's Studies minor helps students examine the basic assumption of a variety of academic disciplines from the perspective of women. The minor brings together courses from a number of disciplines and allows students to design a flexible program suited to their individual needs and interests. Dr. Debra Kaufman, Department of Sociology and Anthropology, may be contacted for further information.

New England Quarterly

The *New England Quarterly*, published without interruption since 1928, is America's leading historical review of New England life and letters. Each book-length issue presents major articles in the fields of literature, history, and culture; a special feature of brief memoranda and recently discovered documents; and a substantial book review section.

Romanticism Past and Present

Romanticism Past and Present is a journal that publishes articles and reviews of books dealing with a Romantic sense of the past. After changing its title from *Milton and the Romantics* in 1981, the journal shifted direction to make it responsive to a broadening conception of Romanticism and Romantic studies. Presently, *Romanticism Past and Present* publishes articles, notes, and reviews. Seeking to develop a comparatist and interdisciplinary orientation, the journal brings interdisciplinary and international concerns to bear on the study of English Romantic literature.

Studies in American Fiction

The journal *Studies in American Fiction* publishes articles, notes, and reviews on all aspects of prose fiction of the United States. Readership and contributors represent an international community of scholars of American literature. The journal's broad professional purpose is to publish new discoveries, new documents, and new interpretations of important works of American fiction. The publication of Volume 10 in 1982 marked ten years of Northeastern's sponsorship of *Studies in American Fiction*, the first scholarly journal to be published at the University.

Tennessee Williams Review

The *Tennessee Williams Review* publishes critical and historical articles about the plays of Tennessee Williams and their productions; articles about Williams himself, his fiction and poetry, and about his place in the American theatre; as well as bibliographies, book and play reviews, news, notes, and abstracts of articles about Williams appearing in other journals. The *Tennessee Williams Review* has an international readership composed of scholars and theatre artists who are interested in Williams's writing. The journal appears twice a year and has been at Northeastern since 1982.

The Center for the Study of Sport in Society

The Center for the Study of Sport in Society, the first of its kind in the nation, was established to address the abuses of professional and amateur athletes' education and rights. The Center is expected to play a pioneering role in exploring the important questions of the student athlete and academic integrity that college administrators have long confronted. Still in its formative stages, the Center has already established a North American Faculty Affiliates network of fifty of the nation's top sports scholars. They will be called upon to address and research problem areas of sport. Programs being considered are a University Degree Completion Program for current or recently retired professional athletes; seminars, involving former professional athletes, to discuss the range of problems facing college athletes; a broad-based curriculum in sport and social issues; awards for excellence in sports journalism, both in print and audiovisual media; and campus-wide lectures, forums, and news conferences. Two journals are also published through the Center: *The Journal of Sport and Social Issues* and the *ARENA Review*.

The director of the program is Dr. Richard Lapchick, author, scholar, and civil rights activist. Robert Lipsyte, a veteran sports reporter and columnist now with CBS television news, is the senior fellow.

New England Conservatory Affiliation

According to a reciprocal agreement between Northeastern and the New England Conservatory, a limited number of qualified Arts and Sciences students may take courses at the New England Conservatory as part of the regular course load and tuition fee at Northeastern. This arrangement provides for Northeastern students who qualify the opportunity to enhance their cultural life by taking part in the richness of music education that is the hallmark of the Conservatory. Northeastern students who participate in this program, as well as any student who declares music as his or her major, are also given full library privileges to the Conservatory.

Students interested in this program should contact Professor Joshua Jacobson, Chairman of the Music Department at Northeastern, 437-2440, to make the appropriate arrangements.

Availability of all special programs is contingent upon minimum enrollment requirements and, when an outside institution is involved, continued affiliation of that institution with the University.

Graduation Requirements

Quantitative Candidates for either the Bachelor of Arts or Bachelor of Science degree who entered in or after the fall quarter of 1974 must successfully complete 176 quarter hours of credit, of which thirty-two quarter hours may be taken outside the College of Arts and Sciences. In addition, only four quarter hours of Physical Education credits and no ROTC credits may be used to meet degree requirements.

Residency Candidates must complete either 75 percent of the degree credit at Northeastern or the last three full quarters (a minimum of twelve full courses) at Northeastern.

Qualitative Candidates must achieve a minimum cumulative average of 2.0 (grade of C).

Freshman English All degree candidates must complete one quarter of Freshman Composition and one quarter of Introduction to Literature. Normally, this will be done by completing courses 30.113 and 30.114 at Northeastern.

Major Candidates must complete successfully the courses specified as major requirements. A complete listing of these required courses is published in the *Basic Day College Course Descriptions and Curriculum Guide*.

Core Curriculum Students entering the college as freshmen in the fall of 1984 or thereafter must complete several "core requirements" for graduation; these replace the previous college "distribution requirements." The Core Curriculum requires that courses be taken in the following areas: basic skills, both communicative and quantitative; methods of inquiry; alternative cultures and societies; theoretical perspectives and changes; and current issues in perspective. Full details are provided to students at entry, and are also available from academic advisers in the Dean's Office.

For all students who entered prior to the fall of 1984, or for upperclass students who enter in the fall of 1984, the previous "distribution requirements" must be satisfied, as described in earlier editions of this Bulletin. Again, full details are available from academic advisers in the Dean's Office.

Foreign Language All candidates for the Bachelor of Arts degree must attain a level of proficiency in a modern foreign language indicated by passing grades in intermediate-level college courses or by meeting a comparable criterion that has been approved by the Modern Languages Department.

A **conditional exemption** from this requirement may be granted in the following situations:

- 1) students who earned an average grade of C or better in a full, four-year language sequence in secondary school
- 2) students who earned an average grade of A in a three-year language sequence in secondary school.

A conditional exemption **must** be confirmed by taking a proficiency examination during the first quarter at the University. A sufficiently high score will verify the exemption; otherwise the student will be advised of the appropriate language course to take in the following quarter.

An **absolute exemption** will be granted to students:

- 1) for whom English is a foreign language
- 2) who receive a score of 550 or better in the Language Achievement Examinations.

For students who have not met the foreign language requirement at the time of entrance, the entry level into foreign language study depends upon the scope and level of prior study. The normal sequence for students with no prior preparation is two quarters of elementary-level language and two quarters of intermediate-level language. The Modern Languages Department will determine an appropriate entry point at which students who have partial language preparation may begin completing the requirement.

Graduation with Honors

Candidates who have completed all degree requirements and have attained superior grades in their academic work will be graduated with honor (3.000 to 3.499 cumulative average); high honor (3.500 to 3.749 cumulative average); or highest honor (3.750 to 4.000 cumulative average). Transfer students who have completed all degree requirements and at least six full quarters of course work in the College of Arts and Sciences at an honors level as defined above may graduate with honors. The course work completed at other institutions, however, when weighed and averaged in with Northeastern University's work, must equal the University's honors level. The level of honors designated on the Northeastern diploma and transcript shall be no higher than the honors level attained as a Northeastern student.

Commencement Exercises

The College of Arts and Sciences holds commencement exercises each June and September.

Accreditation

All programs in the College of Arts and Sciences are fully accredited by the New England Association of College and Secondary Schools.

Boston-Bouvé College of Human Development Professions

Paul M. Lepley, Ed.D., *Dean*

Janice Walker, A.B., *Assistant Dean, Graduate School*

Program Aims

Boston-Bouvé College of Human Development Professions offers undergraduate majors in four departments: Education; Health, Sport, and Leisure Studies; Physical Therapy; and Speech-Language Pathology and Audiology. The College also has graduate programs in Counseling Psychology, Curriculum and Instruction, Educational Administration, Foundations of Education, Rehabilitation Administration, Special Education, Speech-Language Pathology and Audiology, Physical Education, Physical Therapy, and Recreation and Leisure Studies, with the Master of Education, Master of Science, CAGS, and Doctor of Education degrees conferred.

The primary goal of the College is to provide the finest education for every student. To meet demands for fully qualified personnel, the College strives to develop the independent, self-reliant individual.

A View of the Five-Year Program Professional preparation is based in the liberal arts and sciences, with orientation to each profession beginning in the freshman year. There is a concentration on specific competencies spaced throughout the programs and on professional theory and practice in the last two years. In the junior or senior year, all students have the opportunity to synthesize knowledge and skills through supervised experiences in clinical practice, student teaching, field experience, or internships. Each curriculum is enriched by cooperative education experiences that, for the most part, are related to a student's area of specialization. At times, these experiences are professionally unrelated, but are always concerned with people, thus providing an opportunity of inestimable value in any career.

Facilities

The facilities of the College are quite diversified. Dockser Hall houses administrative and faculty offices, classrooms, a gymnasium, dance studio, computer laboratories, physiology of exercise laboratory, and locker and shower facilities, as well as a community recreation laboratory, arts and crafts area, seminar rooms, and a motor-learning laboratory. The swimming pool, weight room, handball/racquetball courts, offices, and shower and dressing facilities are located in the Barletta Natatorium complex. The Cabot Building, attached to Barletta, contains one very large gymnasium and another well equipped for gymnastics, as well as wrestling, exercise, and weight training rooms, an athletic training laboratory, an indoor track and activity area, offices, and extensive locker room space.

The Department of Education administratively houses three resources for Boston-Bouvé College: The Reading Clinic, The F. Andre Favat Learning and Resources Center and Library of Children's Literature, and the Russell J. Call Children's Center. The Reading Clinic, in 1 Holmes Hall, provides corrective instruction for area school children while students enrolled in the Department's reading courses receive clinical experience. The F. Andre Favat Center, in 1 Nightingale Hall, contains a collection of children's literature and related learning resources including books, tests, professional journals and manipulative materials. The Russell J. Call Children's Center, located in the Forsyth Building, pro-

vides day care for children ranging in age from two years and nine months to five years whose parents are faculty, staff or students of North-eastern University. Forsyth Building is the location for a Speech-Language-Hearing Clinic, where students may observe, through one-way glass or television monitors, the actual delivery of clinical services. This clinic and a Speech Communications Research Laboratory are facilities of the Department of Speech-Language Pathology and Audiology. The Human Services Program office is in room 127, Meserve Hall.

The Physical Therapy Department is located in Mary Gass Robinson Hall. On the third and fourth floors are the physical therapy faculty offices, the Lupean Professional Library, classrooms, and three laboratories. The laboratories are designed and equipped specifically for the practice of clinical procedures. The library's reading room supplements the University library, maintaining an up-to-date collection of physical therapy and medical books for use by students and faculty in the program and the College.

The Warren Center serves as a practical laboratory for the College. Its athletic fields and tennis courts, ropes course, cross-country ski trails, natural setting of lake, woods, fields, streams, winterized cottages, and Hayden Lodge provide year-round opportunities for outdoor learning twenty-five miles from the Boston campus. Courses, conferences, seminars, and workshops are conducted at the Center throughout the year and thus serve University and community needs.

Admission

See page 224 for information concerning admission. In the third year, prior to the first supervised clinical education experience, Physical Therapy students must be examined either by physicians in the University Health Services, at a moderate fee, or by a personal physician. Students majoring in programs offered by the department of Education and the department of Health, Sport, and Leisure Studies must submit evidence that they are free of tuberculosis before engaging in student teaching.

Graduation Requirements

Degrees Students graduating in Early Childhood Education, Elementary and Secondary Education, Human Services, Health Education, Physical Education, and Speech and Hearing earn the degree of Bachelor of Science in Education; those completing the Recreation and Leisure Studies program are awarded the Bachelor of Science in Recreation and Leisure Studies degree; and students graduating in Physical Therapy receive the degree of Bachelor of Science in Physical Therapy. These degrees are awarded to qualified candidates who have completed the prescribed curricula. Student teaching, field experience, or clinical practice is an integral part of the curriculum and is required for graduation.

Qualifications

Quantitative The quarter hours required in each curriculum differ.

	Q.H.
Early Childhood Education	181
Elementary/Secondary Education	181/177
Health Education	178
Human Services	176
Physical Education/Athletic Training	180/185
Physical Therapy	170
Recreation and Leisure Studies	172
Speech and Hearing	177

Students must satisfy the requirements of the Department of Cooperative Education to become eligible for their degrees.

Senior-year course work and required experiences must be completed in full-time residence at Northeastern University or in an educational setting approved by the College.

Qualitative The overall cumulative quality-point averages required to enter each class level are explicitly stated in the Student Handbook. Throughout the professional sequence, students must maintain required averages and must demonstrate a high level of personal and professional maturity to continue field practice and be approved for graduation. Because of accreditation recommendations and differences in curricula, variations in qualitative requirements may occur.

Transfer students in any curriculum may be accepted into the College at upperclass levels except in physical therapy, if there are available spaces. Each transcript is individually assessed for qualification, placement, and course design.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a number of this group may be graduated with high honors or highest honors. Students must have been in attendance at the University for at least six quarters before they become eligible for honors at graduation.

Program Accreditation

The curriculum in Physical Therapy is accredited by the American Physical Therapy Association. Elementary and Secondary Education, Health Education, Physical Education, and Speech and Hearing are accredited by the National Council for Accreditation of Teacher Education. Programs in Early Childhood, Elementary Education, School Health Education, and Physical Education are also state-approved under the Interstate Certification Compact.

Licensure/Registration

All fifty states have laws governing the practice of physical therapy. In order to be eligible for employment to practice physical therapy, graduates must meet the specific legal requirements of the state in which they wish to work. In most states the requirements include graduation from an accredited school of physical therapy and a satisfactory grade on a written examination. Graduates are responsible for finding out what the specific legal requirements are to practice in the state in which they seek employment.

Certification

Upon successful completion of the programs in Early Childhood, Elementary Education, Secondary Education, School Health Education, and Physical Education, students are eligible to apply for certification by the Commonwealth of Massachusetts. Certification is required for public school teaching, but does not guarantee a position. Reciprocal certification is available in many states of the United States. Graduates are responsible for determining the requirements of the states in which they are interested.

Focus on the Student

There is a uniqueness about this College. Perhaps it is the personal touch, a keen interest in every man and woman, expressed in individualized advice and counsel. The College has its own professional clubs

and Dance Theatre. Its social clubs and assemblies contrast with study rooms, seminars, and places for research. There is skiing in winter, camping in summer, and year-round sports.

Community service is stressed in every department—service to those with special needs: the physically handicapped, inner-city youth, the aging.

Department of Education

Paul H. Tedesco, Ph.D., *Professor and Chairman*

Professors

E. Vaughn Guloyan, Ed.D.
John D. Herzog, Ph.D.
Melvin Howards, Ph.D.
Mervin D. Lynch, Ph.D.

Assistant Professors

Thomas H. Clark, M.A.
Carlton B. Lehmkuhl, Ph.D.
John F. Maguire, M.Ed.

Associate Professors

Ronald E. Baptiste, Ed.D.
Nicholas J. Buffone, Ph.D.
Leslie A. Burg, Ed.D.
Susan E. Ellerin, Ph.D.
Thomas F. Henstock, Ed.D.
Mary J. Lee, M.Ed.
Joseph Meier, Ed.D.
Harold A. Miner, Ed.D.
Irene A. Nichols, Ed.D.
Sandra M. Parker, Ed.D.
Barbara A. Schram, Ed.D.

The Department of Education offers basic and advanced courses in the Humanities and Behavioral Sciences for students in Education, Human Services, and other Human Development Professions. The aims of these courses are to promote understanding of the processes of intentional socialization and deliberate intervention in people's lives and to familiarize students with the body of knowledge dealing with the principles of human development and well-being.

The courses are open to students across the University provided they can meet the prerequisites listed in the *Basic Day Colleges Course Descriptions and Curriculum Guide*:

Education and Social Science
Human Development and Learning I
Human Development and Learning II
Creative Expression in Children
Educational Applications of Social Psychology
Mental Health in Teaching
Cross-Cultural Studies of Child Rearing and Education
Language and Cognition: Educational Implications
Seminar in Adolescent Psychology
Seminar in Human Learning and Motivation
Seminar in Early Childhood Development
Measurement and Evaluation

Introduction to Educational Statistics
Comparative Education
Philosophy of Education
Current Issues in American Education
Seminar in Group Process
Day-Care and Nursery Schools: Social and Cultural Origins
Schools as Social Systems
Class and Ethnic Relations in Education
Organization and Politics of School Systems
The Human Services Professions
Educational and Psychosocial Development
Education and Social Change
Directed Study

The Department of Education also provides teacher preparation programs in a variety of fields and levels. To assist students enrolled in these programs, the Department utilizes three support units; the Reading Clinic, the F. Andre Favat Learning Resources Center and the Russell J. Call Children's Center.

The aim of the Department is to make it possible for students to gain certification in a teaching major and/or level and to acquire the competencies necessary for success in teaching.

Teacher Preparation

Early Childhood Education (K-3) Students in the Early Childhood Education program pursue studies in the College of Arts and Sciences and in other basic colleges of the University, as well as in the Boston-Bouvé College. This broad academic background, combined with experiences in the Cooperative Education program, permits the development of a solid professional base. The Russell J. Call Children's Center provides experiences in fieldwork for students in the Early Childhood Education program. Pre-student teaching experiences in appropriate field settings are an integral part of several required courses.

Elementary Education (Grades 1-6) Elementary Education majors acquire a broad academic base by enrolling in courses chosen from various colleges of the University. Acquiring the necessary teaching competencies is the result of the course experiences, the work experiences in the Cooperative Education program, and the pre-student teaching field activities. In addition to courses required of all Elementary Education majors, students choose an area of emphasis from the following: Humanities, Language-Reading, Science-Mathematics, or Social Science.

Emphases usually consist of 40 quarter hours. Each emphasis has been designed to help focus the studies, but does not lead to certification in that specific area. It may, however, serve as a catalyst for further study in a graduate program.

Special Education Minor Students majoring in elementary education may complete a minor in special education which will permit them to apply for certification to teach children with moderate special needs in the Commonwealth of Massachusetts.

Secondary Education (Grades 9-12) Those interested in teaching grades 9 through 12 may major in one of the following teaching areas: Biology, Chemistry, Physics, English, General Science, Mathematics, Modern Languages, History, or Social Studies. Programs in Secondary Education provide not only for the acquiring of a major in one of the

fields but also for gaining experience through Cooperative Education, required courses and pre-student teaching field experiences. All of these assist in the student's effort to achieve the needed competencies.

Student Teaching Student teaching is a full-time experience for a complete academic quarter during the senior year. It follows planned experiences that are designed to help the student toward a rewarding quarter of student teaching. A University professor and a cooperating classroom teacher have shared responsibility in the supervision of each student teacher.

Teacher Certification

Inasmuch as public education is a state responsibility, each state prescribes the conditions under which persons may be licensed to teach in its public schools. The requirements for obtaining a certificate for teaching, therefore, vary among the different states.

These programs are designed to meet the requirements for certification in the Commonwealth of Massachusetts and in certain other states. Details may be obtained from the department chairman.

Department of Health, Sport, and Leisure Studies

Carl S. Christensen, Ph. D., *Professor and Chairman*

Professors

John W. Fox, Ed.D.
Peter J. Graham, Ed.D.
Richard C. Zobel, Ed.D.

Associate Professors

Robert S. Curtin, Ed.D.
Elaine G. Eliopoulos, Ed.D.
William J. Gillespie, Ed.D.
Dorett M. Hope, Ed.D.
Kerkor Kassabian, M.Ed.
Richard B. Morrison, Ed.D.
Mary P. Nicholson, M.S.
Judith A. Noblitt, M.Ed.
Frank M. Robinson, M.Ed.
Harold A. Walker, A.B.

Assistant Professors

George R. Atkinson, Ed.D.
Glenn A. Boden, M.Ed.
Marilyn A. Cairns, Sc.D.
John A. Clayton, Ph.D.
Patricia M. Fetter, Ph. D.
Evelyn B. Howard, M.S.
John W. Shank, Ed.D.
Patricia A. Shank, M.S.
Sara A. Umberger, M.A.
Linda B. Zaichowsky, Ph.D.

Instructors

Michael G. Gaudiano, M.S.
Janet E. Guilfoyle, M.S.

Aims The department provides programs and services, conducts research, and disseminates knowledge concerned with improving the quality of life with respect to leisure, health, and human movement. Faculty are committed to the preparation of practitioners to serve people of all ages and to the scholarly investigation of the several disciplines represented within the department.

Programs Professional preparation is provided in the areas of Health, Physical Education, and Recreation, with specialized programs in: School and Community Health Education, Physical Education, Exercise Specialist, Athletic Training, Therapeutic Recreation, Recreation Management, and Outdoor Recreation.

Admissions Requirements Students desiring admission to degree programs must meet the entrance requirements of the University. In addition to transcripts showing successful completion of a secondary school, college preparatory program, applicants must submit scores from the Scholastic Aptitude Test (SAT) and three College Board Achievement Tests, preferably in areas related to their intended fields of study. Although not required, a personal interview with an admissions counselor is recommended.

School and Community Health Education

Professional Preparation with Teacher Certification

Aims Health Education is a relatively new profession concerned with the improvement of individual and community health status through educational activities. While working in a variety of settings such as volunteer health agencies, public health clinics, elementary and secondary schools, or health-planning organizations, the health educator facilitates health-promoting behavior changes as a means to enriching the quality of life. The health educator uses techniques and information from both medical and educational fields in order to assist individuals and communities dealing with emotional, physical, or social aspects of health.

Description of the Major Since health has psychological, physical, and social components, the program of study is organized to help students develop an understanding of each of these, as well as their interaction. Course study during the first part of the program emphasizes the foundations of health education in the social and life sciences. Practical experience in health education is included throughout the program to provide the student an opportunity to apply theory and techniques with Boston-area groups. Major courses on contemporary health issues help prepare the student to understand details and complexities of several important health topics. Educational issues and approaches are included in courses to help students understand the role of education in improving health.

Overall, the program of study is intended to produce graduates with the competence to diagnose the health education needs of groups and to develop, organize, and evaluate effective educational activities.

The undergraduate program in Health Education offers students, through the Cooperative Plan of Education, the opportunity to graduate with more than a year's work experience in the field. Through placements with health or educational organizations in the Boston area, students can also finance part of their education while gaining on-the-job work experience.

Although individual health status is determined by genetics, environment, diet, and behavior, current research indicates that behavior is the determinant most likely to influence further improvements in the health of individuals. Health education is directed primarily at health behaviors in order to prevent health problems and to promote health. Throughout the program of study, the concepts of prevention, health promotion, wellness, and holistic health serve as common threads in professional preparation. The development of specific competencies for health education roles is an objective in each of the Department program requirements.

Certification

Upon successful completion of the requirements for graduation in Health Education, students in School Health Education are eligible to apply for Massachusetts Certification and to teach in the public schools of Massachusetts. Certification is also readily obtained in other states having certification reciprocity agreements with the Massachusetts Department of Education. There are no certification criteria for students in Community Health Education. However, all students must satisfy departmental requirements before being approved for graduation in School and/or Community Health Education. The professional program in School Health Education is accredited by NCATE and is approved under the Interstate Certification Compact.

Sample Freshman-Year Program of Studies in School and Community Health Education

First Quarter

General Chemistry
English
Education and Social Science
Current Issues in Health
First Aid

Second Quarter

General Chemistry
Biology
Education and Social Science
Elective
Instructional Resources
Introduction to Safety
Foundations of Health Education

Third Quarter

Health Concerns of Youth
Biology
English
Mathematics or General Studies
Elective
Physical Education

Basic Course Requirements

I. General and Professionally Related Requirements

Course	Q.H.	Course	Q.H.
General Chemistry*	8	Social Science*	8
English*	8	Human Development†	8
Biology*	8	Measurement and Evaluation	4
Microbiology	4	Introduction to Special Education	4
Mathematics*	4	Humanistic Foundations	4
Psychology	8	Physical Education	2
Anatomy and Physiology	8	General Studies Electives	24

*Courses are usually taken in the freshman year.

†Courses are usually taken in the sophomore year.

 II. Professional Requirements

Course	Q.H.	Course	Q.H.
Foundations of Health Education*	2	Community Health Organization and Administration of School and Community Health Education	4
Human Sexuality/Family Drug Use and Abuse	4	First Aid*	2
Mental Health	4	Instructional Resources*	2
Nutrition	4	Health Concerns of Youth*	4
Seminar in Health Education	4	Concepts in Health, Aging and Longevity	4
Health Counseling	4	Practicum in School Health or Practicum in Community Health	12
Teaching Procedures/ Curriculum		Analysis of Teaching	4
Health Education for School and Community Communicable/	4		
Degenerative Diseases	4		
Introduction to Safety*	2		
Current Issues in Health*	4		

*Courses are usually taken in the freshman year.



Physical Education

Professional Preparation with Teacher Certification

Aims The teacher certification program in Physical Education is designed to offer students the opportunity to prepare themselves as exercise specialists and professionals capable of developing the materials and methods appropriate to teaching physical education in public and private schools at all levels—elementary, secondary, and college. Its graduates are qualified as athletic coaches and/or trainers, physical education and dance teachers, directors of athletics, supervisors of physical education, and leaders in YMCAs, YWCAs, health clubs, other youth organizations, and exercise specialists in industry and business.

Description of the Major Students majoring in this program are offered a strong background in general education. Elective hours are required in the areas of science, social science, and humanities. Courses in physical education include history, philosophy, principles, curriculum development and class procedures, measurement and evaluation, kinesiology, exercise physiology, and motor development and learning. Students receive instruction in the techniques of coaching the various individual, dual, and team sports, and in adapting these activities to the needs of the handicapped. Because physical education overlaps the fields of health and recreation, Physical Education majors may take courses in these areas.

Areas of emphasis in Physical Education include Athletic Training, Dance, Adapted Physical Education, Coaching, Gerontology, Cardiovascular Health and Exercise, Elementary School, and Secondary School. Class advisers are available to assist students as selections are made.

The development and demonstration of personal skill in performance and teaching are an integral part of the teacher certification professional program. Each student is expected to demonstrate a competent level of knowledge and skill proficiency in swimming, gymnastics, track, badminton, tennis, rhythmic, volleyball, basketball, conditioning, dance, two team sports, and one individual sport. Skill may be demonstrated through competency testing or by taking the appropriate courses. Major students are assigned supervised student-teaching or field experiences in schools or agencies throughout the Greater Boston area as appropriate to their areas of concentration. In addition, students have the opportunity to increase their experience with children or adults through cooperative work assignments and in pre-practicum courses. Physical Education majors are expected to maintain a specific grade average in order to be retained in the curriculum. Required averages are listed for each class level in the current *Student Handbook*.

Clothing appropriate for physical activity classes is required. Fees may be assessed in courses requiring highly specialized equipment, supplies, or off-campus facilities. A one-week resident program at the Warren Center is required during the spring quarter of the freshman year, for which an additional room and board fee is charged.

Physical Education Nonteaching Options

With judicious use of general studies electives and some adjustment in the basic Physical Education curriculum, students may enroll in the nonteaching option in physical education—Cardiovascular Health and Exercise. Preparation in this option is appropriate for those interested in working in health clubs or spas; stress-testing units; and adult fitness programs in YMCAs, YWCAs, or other private agencies; or as exercise specialists in corporate fitness training programs.

Certification

Upon successful completion of the Physical Education requirements for graduation, students are eligible to apply for Massachusetts Certification and to teach in Massachusetts public schools. Those who have completed the Athletic Training area of emphasis within the Physical Education curriculum are eligible to apply to the National Athletic Trainers Association to take the certification examination. Certification in Physical Education and/or Athletic Training does not guarantee a position.

The professional program in Physical Education is accredited by the National Council for Accreditation for Teacher Education, the Interstate Certification Compact/National Association of State Directors of Teacher Education and Certification, and the National Athletic Trainers Association.



Basic Course Requirements**I. General Requirements for All Physical Education Freshmen (Year One)**

Course	Q.H.	Course	Q.H.
English I & II	8	Current Issues in Health	4
Biology I	4	Human Movement	3
Biology II, Chemistry, or Physics	4	Life/Career Planning	3
Social Science I	4	Mathematics	4
History/Philosophy PE	3	First Aid	2
Track & Field	1	Group Dynamics	3
Swimming	1	Basketball	1
Gymnastics I	1	Gymnastics II	1
Volleyball	1	Human Development I	4

II. Upperclass Requirements for Teacher Certification Students (Years Two–Five)

Course	Q.H.	Course	Q.H.
Human Development II	4	Kinesiology I & II	8
Educational Statistics	4	Measurement and Evaluation	4
Psych. Elective (specified choices)	4	Exercise Physiology I	4
Anatomy and Physiology I & II	8	Theory of Coaching/Play	2
Adapted PE I	4	Elementary School Activities or	
Motor Development	4	Secondary School Activities	3
Motor Learning	4	Athletic Training	3
Critical Teaching Skills	4	Administration of PE	4
8 Prof. Skill Electives	8	Curricula Development	3
Boston-Bouvé Electives	9	Student Teaching	12
		4 Teaching, Analysis/ Coaching Courses	8
		General Studies Electives	24

Graduation Requirement 180 Q.H.; 185 Q.H. for Athletic Training option

Curriculum may be altered because of changes in state certification regulations.

NOTE: Teaching options in Athletic Training, Adapted Physical Education, Gerontology, Coaching, and Elementary or Secondary School are available with only minor adjustments to the above-listed curriculum.

 III. Professional Requirements for Nonteaching Option: Cardiovascular Health and Exercise Specialist (Years Two–Five)

Course	Q.H.	Course	Q.H.
Anatomy-Physiology I & II	8	Exercise Physiology	4
Kinesiology I & II	8	Cardiopulmonary Disease	4
Human Development II	4	Health Counseling	4
Chemistry I & II	8	Advanced Athletic Training	4
Basic Athletic Training	3	Exercise Testing and Prescription	3
Motor Learning	4	Electrocardiography	4
Motor Development	4	Nutrition	4
Statistics	4	General Electives	10
Psychology Elective (specified choices)	4	Administration of Recreation	4
Public Health	4	Budget Analysis	4
Clinical Athletic Training	2	Special Problems	4
Measurement & Evaluation	4	Field Experience	12
Introduction to Counseling	4	Physical Education Activity Skills: Swimming, Tennis, Conditioning, Badminton, and 7 Electives (these are in addition to the 6 first-year skills)	11
		Graduation Requirement	185

All program options in Physical Education, teaching or nonteaching, must be declared by the end of the sophomore year. Subsequent changes may result in an extended graduation date.

Recreation and Leisure Studies

Professional Preparation

Aims Recreation is a vital profession in this rapidly changing world. A major in Recreation and Leisure Studies offers diversified curricular opportunities and multiple career options for graduates. As societal changes reflect a balance of work, education, and leisure, the Recreation and Leisure Studies program seeks to prepare students to guide others in the integration, planning, and ordering of changes throughout their life span and to manage recreation agencies in a variety of leisure service settings.

Description of the Major The curriculum provides an opportunity for students to select from one of three flexible professional career areas of concentration: Recreation Management, Therapeutic Recreation, and Outdoor Recreation/Environmental Education. The Recreation Management concentration is designed to provide students with the knowledge and skills that will enable them to pursue positions in commercial recreation and tourism; planning firms, management organizations; federal, state, and local public agencies; consulting firms; health and fitness

centers; and private agencies. The Therapeutic Recreation concentration is designed to equip students with the professional job skills that are essential to work with disabled people in institutions and community-based settings, including hospitals, rehabilitation facilities, nursing homes, schools, and residential centers as well as day-care vocational/avocational centers and in therapy collaboratives. Students with an emphasis in Outdoor Recreation/Environmental Education have an opportunity to pursue positions as interpreters, park rangers, resource recreation managers and planners, conservationists, and environmental impact specialists.

The cooperative program of study is based in the liberal arts and sciences, with courses in professional education beginning in the freshman year. All students take a common department core of courses and professional skills that complement one of three areas of concentration.

An internship in a selected recreation and leisure service setting provides both an exciting and practical opportunity for students to gain professional, career-level work experience. In addition, the cooperative plan offers an opportunity for practical, on-the-job experience in youth agencies, municipal recreation departments, private recreation agencies, hospitals and institutions, nursing homes, commercial recreation and tourism organizations, and many more selected settings.

A variety of experiential education opportunities supplementing regular course offerings is available at the Warren Center of Northeastern University, a unique teaching-learning laboratory within easy commuting distance of Boston, and through the summer wilderness program.

Special Requirements

Students are scheduled for their one-week resident camp experience at the close of the freshman year at the Warren Center in Ashland, approximately twenty-five miles west of the Boston Campus. The lab fee for this experience is approximately \$165 per student.

Sample Freshman-Year Program of Studies in Recreation and Leisure Studies

First Quarter

English
Speech Fundamentals
Social Science
Life Career Planning

Second Quarter

Basic Biology
English
Social Science
Foundation of Leadership in
Leisure Services

Third Quarter

Basic Biology
Current Issues in Health
Social Science
Recreation Skills

One-Week Camp Experience

Basic Course Requirements (172 Q.H. are required for graduation)**I. General Requirements (83 Q.H.)**

Course	Q.H.	Course	Q.H.
Biology	8	Earth Science electives	8
English	8	Anatomy and Physiology	8
Social Science	12	Free Electives	24
Speech Fundamentals	3		
Current Issues in Health	4		
Human Development	8		

II. Professional Core Requirements for All Students (59 Q.H.)

Course	Q.H.	Course	Q.H.
Life/Career Planning	4	Foundations of Leadership in Leisure Services	4
Intro. to Recreation and Leisure	3	Dept./Univ. Skill electives	12
Research	8	Internship Seminar	1
Program Planning	4	Internship in Recreation	16
Group Dynamics	3	Senior Seminar	4

**III. Professional Requirements for Recreation Management
Concentration (32 Q.H.)**

Course	Q.H.
Budget Analysis	4
Elements of Outdoor Recreation Planning	4
Administration of Recreation and Parks	4
Program Evaluation	4
Professional Electives	16

**IV. Professional Requirements for Therapeutic Recreation
Concentration (32 Q.H.)**

Course	Q.H.	Course	Q.H.
Social and Psychological Impacts of Disabilities	4	Overview of Physical Disabilities	4
Foundations of Psychiatric Service in Therapeutic Recreation	4	Program Planning in Therapeutic Recreation	4
		Process of Aging	3
		Professional Electives	13

**V. Professional Requirements for Outdoor Recreation/Environmental
Education Concentration (32 Q.H.)**

Course	Q.H.	Course	Q.H.
Environmental Education	4	Elements of Outdoor Recreation Planning	4
Seminar on Environmental Issues and Legislation	4	Survey of Recreation Facilities	3
Interpretation of Ecological and Social History	4	Professional Electives	13

 VI. Professional Electives

Course	Q.H.	Course	Q.H.
Sports Leadership	2	Leadership and	
Survey of Aquatics	2	Organization of	
Introduction to Winter		Wilderness Recreation	4
Skills	1	Arts and Crafts for Leisure	4
Survey of Recreation		Leisure and the	
Facilities	3	Community School	4
Basic Sailing	2	Leisure Counseling	4
Tripping and Orienteering	2	Urban Recreation	4
Winter Sports	2	Therapeutic Recreation	
Camp Administration	3	with Developmentally	
Outdoor Education for the		Disabled Persons	4
Handicapped	3	Basic Canoeing	2
Basic Rockclimbing and		Commercial Recreation	4
Rappelling	2		
Leisure and Lifestyles	4		
Concepts of Leisure:			
Sociopsychological			
Perspectives	4		

**All-University Electives in
Health Education**

The program in School and Community Health Education is interested in the health status of the University community. In an attempt to meet the health needs of students, several elective courses are offered regularly on selected health issues of potential personal and professional interest to any University student. Courses on topics such as stress and health, nutrition, sexuality, mental health, consumer health, drug use/abuse, and aging are designed to provide current information and concepts related to wellness and health promotion. Instruction is organized into lectures, discussion groups, and demonstrations to provide students the opportunity to understand the significance and application of recent health-related research findings in their own lives.

**All-University Electives in
Physical Education**

A broad selection of electives in dance, sports, games, aquatics, and gymnastics is offered for all University students. All classes are open to men or to women with instructional modifications where appropriate.

The elective program places focus on the lifetime use of sports, dance, and aquatics for recreational satisfaction and participation. Classes are subject to cancellation if enrollments are too low.

Dance Theatre

The Northeastern University Dance Theatre offers students interested in jazz or modern dance as a performing art the opportunity to choreograph and/or perform in concert. In addition to an annual University concert production, this group presents several lecture-demonstrations and/or community concerts each year. Admission is by audition.

**Intramural
and Extramural Sports**

Students are provided a comprehensive program of intramural and extramural sports through clubs, leagues, and individual participation. Separate leagues are organized for commuting, dormitory, and fraternity

students. Intramural sports are organized separately for men and women and, for certain activities, on a coeducational basis. Throughout the year, intramural and club participation may be possible in badminton, basketball, fencing, football, golf, gymnastics, modern and jazz dance, swimming, volleyball, water polo, and other sports. A "drop-in" program for individual leisure physical activity is also provided.

Department Services

Fenway Project Since 1973, students in Recreation and Leisure Studies have been committed to the Fenway Project by providing meaningful recreation services and activities to youth and adults living in the Fenway area, including disabled adult residents at Symphony Towers. Students participate as activity planners and leaders, conducting programs in arts and crafts, coordinating outings and social events, as well as Big Brother/Big Sister programs and the annual spring festival—the Mayfest. Northeastern students are encouraged to participate in all Fenway Project activities.

Recreation Club Organized by Recreation and Leisure Studies majors, the Recreation Club participates in projects of student interest which relate to departmental and professional concerns or issues. A newsletter, issued to students several times a year, informs them of upcoming events in the department and in professional organizations. The club also plans for guest speakers, student workshops, information exchange, orientation programs for new students, and a volunteer service for local programs.



Physical Therapy Department

Jane L. Toot, Ph.D., *Associate Professor and Chairperson*

Professors

Elizabeth J. Fellows, M.A.
Whitney R. Powers, Ph.D.

Associate Professor

Ruth P. Hall, B.S.

Assistant Professors

Catherine M. Certo, M.S.
Janet L. Costa, M.S.
Joan S. Lydic, M.S.
Andrew J. Robinson, Ph.D.
Ruth Rose-Jacobs, M.S.
Margaret L. Schenkman, Ph.D.
Pamela A. Stanton, M.S.

Clinical Supervisor/

Clinical Assistant Professor

Meredith E. Drench, M.Ed.
Dolores A. Price, M.Ed.

Clinical Supervisor/

Clinical Instructor

George B. Coggeshall, M.S.
Nancy C. Gilberti, M.M.S.

Lecturer

Edward M. Quinn, M.S.

Professional Preparation

Aims The Department of Physical Therapy is dedicated to the preparation of therapists who can provide services of the highest quality in a time of changing concepts, new trends, and new challenges. Students will have the opportunities to acquire the skill to help patients gain functional independence and to learn to recognize and assist with emotional and socioeconomic problems that affect recovery.

Description of the Major Physical Therapy is one of the health professions contributing to the delivery of comprehensive health care. The physical therapist is highly skilled in evaluation procedures and in the planning and execution of treatment programs appropriate to a patient's condition or disabilities. Additional responsibilities may include health-care planning and community service.

Physical therapists are employed in institutions such as general hospitals, children's hospitals, university hospitals, rehabilitation centers, schools or centers for crippled children, nursing homes, extended-care facilities, and community, state, and federal agencies. Private practice is another option chosen by physical therapists. In addition, there are increasing opportunities in teaching and research in physical therapy.

A View of the Five-Year Major The five-year program in Physical Therapy, based on the cooperative plan, is unique in physical therapy education.

The program of study integrates liberal arts and sciences and professional courses, with major emphasis on liberal arts in the first two years of the program and on professional preparation in the last three years. The professional courses include such subjects as anatomy, kinesiology, pathology, clinical medicine, neurology, orthopedics, physiology, physical therapy procedures, and administration, as well as clinical experience in various hospitals and clinics.

Lecturers from Tufts University School of Medicine and the New England Medical Center Hospitals, as well as from medical and social agencies in the Boston area, augment the professional staff in the Physical Therapy program.

Supervised clinical education is a strong component of the curriculum and a requirement for graduation. Clinical experience provides the student with opportunities to practice various phases of physical therapy under supervision in preparation for qualifying as a physical therapist.

Assignments in clinical education are not confined to the Boston area. They may include physical therapy departments throughout the country, particularly in many states along the eastern seaboard.

Students admitted to the Department of Physical Therapy must maintain acceptable standards of scholarship and performance in the prescribed program. They must also demonstrate good health, verbal fluency, essential motor skills, and emotional maturity; they must complete all required courses and have favorable evaluations from clinical education and co-op experience. To continue in the program, students are required to maintain a grade of C or better in all professional courses, and in all Basic Science prerequisite courses listed in the Academic Policy Statement of the Department of Physical Therapy.

All students interested in majoring in physical therapy should contact the Department of Physical Therapy for information regarding departmental academic policies and procedures.

Clinical Education Students on clinical education assignments should plan on additional expenses, including travel.

Sample Freshman-Year Program of Studies in Physical Therapy

First Quarter

Foundations of Psychology I
Fundamentals of Mathematics
Basic Animal Biology
Health Education
First Aid

Third Quarter

General Chemistry
Basic Animal Biology
English

Second Quarter

Fundamentals of Mathematics
General Chemistry
English
Introduction to Physical Therapy

In addition to the above courses, students may elect to take Basic ROTC.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
Fundamentals of Mathematics*	8	Basic Physics†	9
Basic Animal Biology*	8	Human Physiology†	8
English*	8	Human Anatomy†	4
General Chemistry*	10	Foundations of Psychology I*	4
Current Issues in Health*	4	4 General Electives	16
First Aid	2	Foundations of Psychology II†	4

*These courses are usually taken in the freshman year.

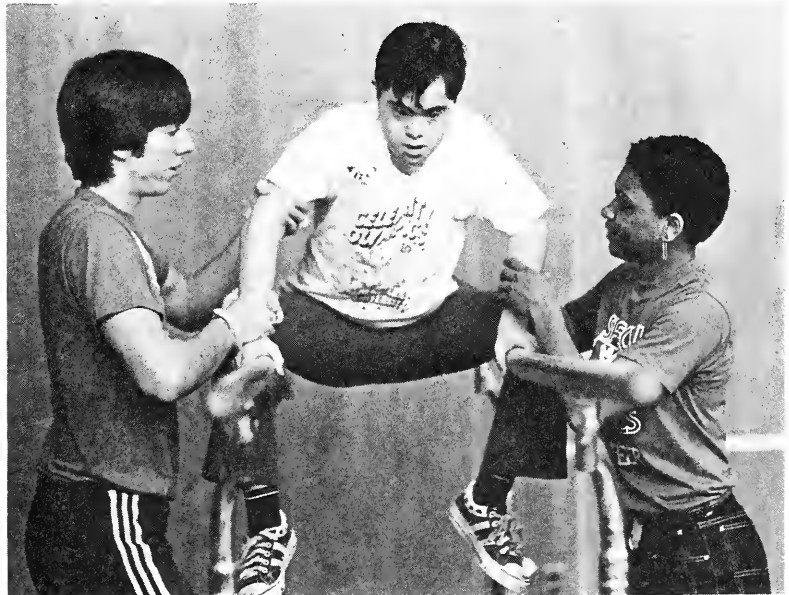
†These courses are usually taken in the sophomore year.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Introduction to Physical Therapy*	2	Advanced Therapeutic Exercise	4
Introduction to Physical Therapy†	2	Neuroanatomy	4
Perceptual and Motor Learning†	3	Integration of Therapeutic Exercise	2
Clinical Gross Anatomy	6	Electrical Testing and Treatment Procedures	2
Physiology for Physical Therapists	4	Research Design	4
Massage	2	Psychosocial Aspects of Illness	3
Clinical Medicine I, II, III	10	Physical Therapy in the Health-Care System	3
Clinical Psychiatry	2	Supervised Clinical Education	5
Clinical Kinesiology	4	Clinical Seminar	2
Basic Therapeutic Exercise	4	Administration	3
Evaluation Procedures	3	Investigative Studies	6
Prosthetics/Orthotics and Functional Activities	3	Graduation Requirement	170
Management of Medical/Surgical Respiratory Disorders	2		

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.



Speech-Language Pathology and Audiology Department

Robert B. Redden, Ed.D., *Associate Professor and Chairman*

Professor

Robert J. Ferullo, Ed.D.

Associate Professors

Mary Florentine, Ph.D.
Arlene T. Greenstein, Ph.D.
F. Adele Proctor, Sc.D.

Assistant Professor

Melanie B. Fried-Okun, Ph.D.

Clinical Supervisor/

Clinical Assistant Professor

Helen Anis, M.A.

Clinical Supervisors/ Clinical Instructors

Nilda M. Collazo, M.S.
Judith M. Goldstein, M.A.
Susan J. L. Ross-Abrahamson,
M.Ed.
R. Laurie Schloff, M.S.
Debra D. Severson, M.S.

Bilingual Speech Pathologist

Silvia Martinez, M.S.

Professional Preparation

Students in the Speech and Hearing major pursue scientific study of the processes of individual human communication. Particular emphasis is placed on speech, language, and hearing.

Aims To achieve a minimum level of clinical competence as a speech-language pathologist or audiologist, students are required to undertake study at the master's degree level. This major seeks to prepare students for professional graduate study and subsequent application for membership in and certification by the American Speech-Language-Hearing Association.

Description of the Major Preprofessional preparation involves a specialized academic experience that provides study of the normal communication processes, the development and disorders thereof; evaluation procedures; and clinical techniques. The emphasis of this major is on the normal processes of communication.

A View of the Five-Year Concentration College and general education requirements include elementary courses in psychology, sociology, anatomy, statistics, education, mathematics, and science.

Required studies of the normal communication processes cover the normal development and use of speech-language and hearing with an emphasis on the normal aspects of human communication. Content areas are 1) anatomic and physiologic bases, such as neurology, anatomy, and physiology of speech, language, and hearing mechanisms; 2) physical bases and processes of the perception and production of speech and hearing, e.g., acoustics (or physics of sound), phonology, physiologic and acoustic phonetics, and perceptual processes; and 3) linguistics, sociolinguistics, and psycholinguistics.

Basic Course Requirements**I. General Requirements for All Students**

Course	Q.H.	Course	Q.H.
English I & II	8	Personality	8
Human Organism	4	Electives*	44
Education & Social Science	4	Abnormal Psychology	8
Human Development I	4	Electives	28
Intro. to Educational Statistics	4		

**These electives must include 8 Q.H. in Educational Sociology, 4 Q.H. in Educational Psychology, 16 Q.H. in Liberal Arts Humanities, 4 Q.H. in Liberal Arts Social Science, 4 Q.H. in Education, 8 Q.H. in Liberal Arts Math/Science.*

II. Preprofessional Major Requirements

Course	Q.H.	Course	Q.H.
Intro. to Speech and Hearing	4	Fluency Disorders	4
Basic Manual Communication	4	Fundamental Reading	4
Anatomy & Vocal Mechanism	4	Professional Development	1
Intro. to Special Education	4	Diagnostic Techniques	4
Developmental Semantics & Syntax	4	Orientation to Clinical Practice	4
Speech Science	4	Phonemic Disorders	4
Intro. to Audiology	4	Developmental Phonology	4
		Hearing Science	4
		Clinical Practice	8

III. Sample Freshman-Year Program of Studies for All Majors in Speech and Hearing**First Quarter**

English I
Education and Social Science
Human Organism
Elective*

Second Quarter

English II
Basic Manual Communication
Elective*
Elective*

Third Quarter

Introduction to Speech & Hearing
Elective*
Elective*
Elective*

**Freshmen are encouraged to consult with their departmental advisers in choosing these electives.*

During the junior and senior years the student pursues beginning courses in understanding speech-language and hearing disorders; evaluation skills, such as procedures, techniques, and instrumentation used to assess communication disorders; and management procedures, such as principles in therapy.

During the senior year students perform supervised introductory clinical practice in a school setting. The focus is on remediation, not on classroom teaching.

The Speech-Language-Hearing Clinic is a facility located in the Forsyth Building at which individuals from inside and outside the university receive audiology and speech-language pathology services. Ample opportunity exists for students to observe the delivery of professional services either directly or via closed-circuit television. Clinic staff includes five certified speech-language pathologists and one certified audiologist. The clinic is accredited by the Professional Services Board of the American Speech-Language-Hearing Association.

The Communication Research Laboratory provides an exciting atmosphere for students interested in research. Under the supervision of faculty, students are given the opportunity to learn about research and perform experiments. The research covers a broad range within the areas of hearing, speech, and language. Our goal is to understand the hearing and language processes and, in particular, the differences between persons with and without communication handicaps. We believe that this knowledge will help us to design better prosthetic devices and to design better training methods for the rehabilitation of persons with hearing and speech handicaps. Facilities include: soundproof rooms; apparatus for measuring speech and for generating, controlling, and calibrating stimuli; audio-video recording and playback instrumentation; an on-line computer for running experiments; and a terminal tie-in with the university's VAX computer.

Program Accreditation Standards

The Education Board of the American Speech-Language-Hearing Association accredits graduate programs only. The graduate program at Northeastern is accredited.

The preprofessional program is accredited by the National Council for Accreditation of Teacher Education.

Certification

Following completion of the master's degree, the graduate must pass a national examination in Speech-Language Pathology or Audiology and complete a Clinical Fellowship Year, which is nine months of supervised clinical experience.

Teacher certification by a state department of education is required for speech-language pathologists and audiologists who are employed in a public school setting. State requirements are not equal nor are they universally reciprocal. Therefore, close examination of state requirement is advisable for those individuals seeking public school employment.

Licensure

Massachusetts is one of the 60 per cent of states in this country that requires speech-language pathologists and audiologists to be licensed. In Massachusetts the certification standards of the American-Speech-Language-Hearing Association parallel state licensing requirements. Other states may vary in licensing requirements.

Human Services

An interdisciplinary major involving the Boston-Bouvé College of Human Development Professions and the College of Arts and Sciences
 Wilfred E. Holton, Ph.D., *Sociology/Anthropology*, Coordinator and Associate Professor

Advisory Committee

Eva Havas, Ph.D., *Sociology/Anthropology*
 John D. Herzog, Ph.D., *Foundations of Education*
 Ronald J. McAllister, Ph.D., *Sociology/Anthropology*
 Barbara Schram, Ed.D., *Foundations of Education*
 Harold S. Zamansky, Ph.D., *Psychology*

Fieldwork Supervisor

Natalie H. Riffin, M.Ed., O.T.R.

Professional Preparation

Aims This major offers students the opportunity to prepare themselves for possible careers in one of the areas broadly defined as "human services." The program is interdisciplinary. The Human Services curriculum allows students to obtain the fundamental attitudes, knowledge, and skills that can lead to a meaningful career in the helping professions as well as to a graduate education in a variety of fields.

Students who major in Human Services prepare themselves to perform a variety of functions in public and private agencies. Through course work, two quarters of fieldwork experience, and possible co-op jobs, students have the opportunity to explore such areas as casework services in social service and welfare agencies; therapeutic treatment programs in mental health settings; supportive counseling in community health centers; rehabilitation counseling services; sheltered workshops; parole counseling; court liaison in programs for delinquent youth; staff work in halfway houses, penal institutions, and drug treatment centers; supportive counseling for the mentally retarded; community organizing; services for the aging; administration in human services agencies; and social program research and evaluation.

Description of the Major The five basic aspects of this program beyond the college requirements are:

- I. Prerequisite Courses—Courses in the areas of sociology, psychology, economics, government, and human services.
- II. Core Courses—Courses in the areas of statistics, research methods, personality, abnormal psychology, personality and social structure, group process, human services organizations, intervention strategies, and new directions in human services.
- III. Specified Electives—Three courses in poverty, minority affairs, and/or special needs.
- IV. Specializations—Five courses that focus on a student's area of interest and selected in consultation with an adviser.
- V. Supervised Field Experience—During the junior and senior years, students spend 300 hours in supervised placement in public or private agencies, usually in separate experiences of 150 hours each.

A View of the Five-Year Major The Human Services major offers students the opportunity to obtain useful values and basic knowledge relating to various human services fields. Courses introducing some basic skills can help them to understand and work with a variety of helping services.

Human Services students at Northeastern have been very active in their major and helpful to each other. The Human Services Student Organization combines social and career-related activities, which in the past have included open houses, day-long conferences, and weekend retreats. A quarterly *Human Services Newsletter* is published by students and faculty.

College of Business Administration

Philip R. McDonald, D.B.A., *Dean*
Thomas E. Moore, Ph.D., *Associate Dean*
Barbara W. Reitz, M.B.A., *Assistant Dean*
Maryann G. Billington, M.B.A., *Assistant Dean (Graduate School)*
Dennis Ramsier, M.B.A., *Assistant Dean (Undergraduate Program)*
Paul M. Morris, Ph.D., *Manager of Computer Services*
Christine A. Chevoor, A.B., *Director of External Relations*
Kitty J. Meijer, B.A., *External Relations Assistant*
Young In Arnowitt, M.S., *Coordinator Academic and Administrative Services*

Accounting Group

Professors

Ronald M. Copeland, Ph.D.,
Lillian L. and Harry A. Cowan
Research Professor of
Accounting
Joseph R. Curran, Ph.D.
Paul A. Janell, Ph.D., *Joseph M.*
Golemme Professor of
Accounting
Russell W. Olive, D.B.A.

Associate Professors

Robert J. Hehre, D.B.A.
Richard Lindhe, Ph.D.
Sharon M. McKinnon, Ph.D.

Assistant Professors

Hassanali Espahbodi, Ph.D.
Stephen Tomczyk, D.B.A.
James F. Volkert, Ph.D.

Lecturers

Alvin M. Black, D.P.A.
Hugh Crossland, L.L.M.
Lynn W. Marples, M.B.A., C.P.A.
James F. McDermott, M.B.A.,
C.P.A.
Peggy L. O'Kelly, M.B.A., C.P.A.
Jonathan Pond, M.B.A., C.M.A.
John R. Schryver, M.S.

Finance and Insurance Group

Professors

Elliott L. Atamian, D.B.A.
Wesley W. Marple, D.B.A.
Edward R. Willett, Ph.D.

Associate Professors

John C. Edmunds, D.B.A.
Gerald P. Madden, Ph.D.
Joseph W. Meador, Ph.D.
Jonathan B. Welch, Ph.D.

Assistant Professors

Stephen A. Kursh, Ph.D.
David N. Leggett, M.Acct.,
C.P.A.
Donald G. Margotta, Ph.D.
Ramaswami Murali, Ph.D.
Coleen C. Pantalone, Ph.D.
Harlan D. Platt, Ph.D.

Lecturers

Swaminathan Badrinath
Kenneth M. Deitch, Ph.D.
James A. Hart, Ph.D.
Duncan Kretovich, M.B.A.

General Management Group

Professors

Geoffrey P. E. Clarkson, Ph.D.
Robert C. Lieb, D.B.A.
David J. McCarthy, D.B.A.

Associate Professors

Jonathan L. S. Byrnes, D.B.A.
Sangit Chatterjee, Ph.D.
Lal C. Chugh, Ph.D.
John Diffenbach, D.B.A.
Angelo J. Fiumara, J.D.
Robert H. Ketchum, Ph.D.
Raymond M. Kinnunen, D.B.A.
James F. Molloy, Ph.D.
David Silverstein, M.A.L.D., J.D.

Assistant Professors

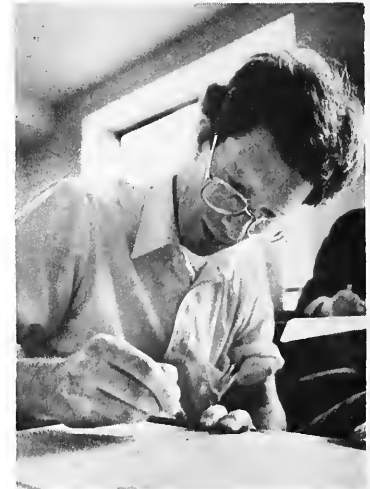
Deborah J. Bickford, Ph.D.
Ali R. Malekzadeh, Ph.D.
Ravi Ramamurti, Ph.D.
Ravi Sarathy, Ph.D.
William Tiga Tita, Ph.D.
Heidi V. Wortzel, Ph.D.

Lecturer

Joseph Chevarley, M.P.A.

Adjunct Professor

Milton C. Lauenstein, M.B.A.



Human Resources Group

Professors

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Associate Professors

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David P. Boyd, Ph.D.

Christine L. Hobart, D.B.A.

Ralph Katz, Ph.D.

Andre P. Priem, M.A.

Francis C. Spital, Ph.D.

Edward G. Wertheim, Ph.D.

Assistant Professors

Rae Andre, Ph.D.

David B. Balkin, Ph.D.

Brendan D. Bannister, Ph.D.

Mark P. Kriger, D.B.A.

Paulette A. McCarty, Ph.D.

Edward F. McDonough III, Ph.D.

Afsaneh Nahavandi, Ph.D.

William C. Ronco, Ph.D.

Bert A. Spector, Ph.D.

Management Science Group

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Associate Professors

R. Balachandra, Ph.D.

Victor B. Godin, D.B.A.

Robert A. Millen, Ph.D.

Carl W. Nelson, Ph.D.

Robert A. Parsons, M.B.A.

Mustafa R. Yilmaz, Ph.D.

Assistant Professors

Peter J. Billington, Ph.D.

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Kathleen Foley Curley, D.B.A.

Nancy Jo Klein Delaney, Ph.D.

Katherine Taylor Halvorsen,
D.Sc.

William L. Huth, Ph.D.

Stephen K. Kwan, Ph.D.

Allen S. Lee, Ph.D.

Robert Mefford, M.A.

Marjorie Platt, Ph.D.

Marius M. Solomon, Ph.D.

Erland V. Sorensen, Ph.D.

Marketing Group

Professors

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Gerrit De Vos, Ph.D.

Robert J. Minichiello, D.B.A.

Frederick Wiseman, Ph.D.

Jehiel Zif, Ph.D. (Visiting)

Associate Professors

Dan T. Dunn, D.B.A.

Edward T. Popper, D.B.A.

Samuel Rabino, Ph.D.

Robert F. Young, D.B.A.

Assistant Professors

Kristina Cannon-Bonventre,
Ph.D.

Anil M. Pandya, Ph.D.

Lecturers

Deirdre Bird, M.B.A.

Hyman Dushman, M.B.A.

Jerry Kirkpatrick, M.B.A.

Nancy Uhring, M.B.A.

Center for Management Development

Richard J. Santos, M.S.,

Associate Dean and Director

John J. Leary, Jr., M.B.A.

Associate Director

Jay E. Barrett, M.B.A.,

Program Manager

Professional Preparation

The College of Business Administration offers concentrations in the principal fields of business: Accounting, Entrepreneurship and New Venture Management (Small Business Management), Finance and Insurance, Human Resources Management, International Business, Management, Marketing, and Transportation and Physical Distribution Management. There is also a provision for those students who wish to design their own concentrations.

These programs are designed for men and women seeking to prepare themselves for managerial responsibility in business, government, and other organizations with the goal of developing the ability to recognize and solve problems and to understand the role of the business firm in the community, the nation, and the world.

In developing these skills, the students have the opportunity to gain not only a broad understanding of business and organizational problems through specialized courses, but also firsthand knowledge of effective solutions. Forty to sixty percent of the course work in the College of Business Administration concentrations is centered outside business to ensure a liberal education.

All concentrations are offered only on the five-year Cooperative Plan, providing most students with substantial practical experience, usually in the fields for which they are preparing.

Aims In keeping with the current trends in collegiate education, the College has adopted the following educational aims:

1. To develop attitudes and ideals that are ethically sound and socially desirable;
2. To cultivate an awareness of the social, political, and economic developments to which the business firm must adapt;
3. To develop the habits of accurate thinking that are essential to sound judgment and the habits of accurate expression that are essential to effective communication;
4. To provide an opportunity for students to develop a specialization in business in accordance with their interests and talents.

A View of the Five-Year Program The College of Business Administration offers a Bachelor of Science in Business Administration degree and has concentrations of courses in several areas. The College combines its business curriculum with courses from the sciences, humanities, and social sciences. Students must take courses in these areas to ensure a well-rounded background so valuable in the business world.

All students in the College are required to complete, in addition to their academic courses, the program of cooperative education. This program gives the student the opportunity to challenge and reinforce in the work place the theories and techniques learned in the classroom. In a similar way, the "well, that's the way they do it in my co-op company" attitudes can be and are questioned in the classroom. This double-faceted approach enhances the whole education process and generally produces graduates with a more realistic understanding of the work place. Cooperative work assignments generally are paid, full-time, professional positions with organizations both in the profit and not-for-profit private sector and in government. Work assignments are for six months of each year above the freshman level.

After the foundation-laying and tools-oriented course work (combined with a large number of nonbusiness courses) of the first two years, the final three years emphasize the various functional areas of business and

require students to concentrate their studies in specific areas. (Detailed descriptions of these areas follows this section.) In most of these upper-division courses the traditional lecture-and-recitation format is supplemented by problem-solving and case-study methods. Using these, students analyze actual businesses and business problems and present recommendations for possible solutions. Students are encouraged to develop the ability to think independently, to support ideas with fact and logic, and to analyze and challenge propositions. The added experience of co-op work assignments, when combined with course work, offers each student practical exposure to the responsibilities of various administrative positions as well as help in determining the kind of organization in which he or she would like to work. Special classrooms have been designed for the College to facilitate the case method of instruction.

During the 1980s, the outlook for exciting careers in Business Administration is optimistic. The challenges that business faces from the effects of foreign policy, high technology, affirmative-action regulations, and new economic policies tend to create a demand for highly trained individuals equipped to analyze the complex problems of modern-day economy.

Upon completion of the Bachelor of Science in Business Administration degree, the graduate may choose to enter the work force (many former students have assumed full-time positions with former co-op employers) or go on to pursue higher degrees.

In general, students find that graduate schools view a B.S. degree in Business as solid preparation for graduate work, not only in business but also in public administration, health-care administration, and education administration. Law schools look favorably on the prelegal background obtained in business school. Although the Association of American Law Schools does not recommend particular courses or curricula for prelegal students, it does advise undergraduates to develop critical understanding of the institutions and values with which the law deals. Many careers in law are directly involved in the business world, either in large corporations or in private practice.

The College's curriculum offers students the opportunity to develop a broad understanding of the business environment, as well as to acquire the specific skills necessary to manage organizations in today's complex social and legal environment.

Honors Program

A place in the Honors Program of the College is extended to juniors and seniors who, at the end of the first quarter of their middler year, rank in the top ten percent of the class. These students are given preference in obtaining entrance to any of the College's honors seminars. They may also participate in a Senior Honors Thesis Project, an independent research project under the careful supervision and direction of a faculty member.

The Honors Program was incorporated to

- provide opportunities to bring together the best students and faculty in stimulating courses and other academic activities,
- increase the knowledge and professional skills of outstanding students,
- enhance the employment or further educational objectives of gifted students,
- develop increased respect in academic and professional communities for the College's students and programs, and
- facilitate course and curriculum experimentation into new and uncharted areas.

Any Honors Program student who completes twelve quarter hours of honors-level work at a B average or higher will receive special recognition of this achievement on both the diploma and the transcript.

Business Administration as a Minor Course of Study

The College of Business Administration faculty, realizing that many students may have an interest in business yet major in other disciplines, offers a Minor in Business Administration. The College of Arts and Sciences, which teaches some of the courses, collaborated in the design of the minor.

The program has been designed so that students who complete the minor will gain a background in disciplines that serve as foundation courses for the study of business and an exposure to its various functional areas. In addition there is an exploration of the relationship between business and society and the obligations of each to the other.

Students of the Basic Colleges other than Business Administration may find the minor particularly attractive if they are considering a career in business and/or are contemplating enrolling in an MBA program, but are not sure what is involved in the study of business. Qualified students who have completed the five background and methodology courses apply for formal admission to the minor after they have accumulated eighty or more quarter hours of credit.

Program Components

Background and Methodology: completed prior to formal entry into the minor

Course	Q.H.
College Algebra	4
Macroeconomics	4
Microeconomics	4
Descriptive Statistics	4
Inferential Statistics	<u>4</u>
	20

Business Functions

Course	Q.H.
Introduction to Business	4
Introduction to Accounting	4
Organizational Behavior	4
Introduction to Finance	4
Introduction to Marketing	4
Operations Management	<u>4</u>
	24

Business and Its Environment

Course	Q.H.
One course from the approved list	4

After a student has completed all program components, the College of Business Administration will so notify the student's Basic College so that appropriate recognition can be made.

Graduation Requirements

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify. This presently totals 176 quarter hours of credit. The degree conferred not only represents the formal completion of selected courses of study, but also indicates professional study in the designated area of concentration. An overall average grade of C and a C average in required courses are necessary for graduation.

Students must be enrolled in a full program of studies in the College of Business Administration during the final three quarters immediately preceding graduation.

Graduation with Honors Candidates who have achieved superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or with highest honor. Students must have been in full-time attendance in the Basic Colleges of the University at least six quarters before they can become eligible for honors at graduation.

Accreditation

The undergraduate program of the College of Business Administration is fully accredited by the American Assembly of Collegiate Schools of Business, indicating that the program meets the accrediting agency's standards for faculty and student quality, curriculum design, and overall University support.

Curriculum

The following sample freshman-year program and the basic course requirements for the College of Business Administration are the same for all concentration areas.

Sample Freshman-Year Program of Studies in the College of Business Administration

First Quarter

Introduction to Business
Fundamentals of Math
Non-Business Elective
Economics (Macro)

Second Quarter

Accounting I
English Composition
Two Non-Business Electives

Third Quarter

Accounting II
English Literature
Non-Business Elective
Economics (Micro)

Students who will complete the Reserve Officers' Training Corps program are permitted to drop one elective each quarter of their senior year. Individual ROTC courses carry no credit toward graduation.

The College of Business Administration has no physical education requirement. Students wishing to take courses in physical education may take a maximum of eight quarter hours as elective credits.

 Basic Course Requirements

Course	Q.H.		
Fundamentals of Math	4	Statistics I & II	8
Quantitative Methods in Business	4	Introduction to Data Processing	4
English	8	Organizational Behavior	4
Introduction to Business	4	Complex Organizations	4
Accounting I & II	8	Operations Management	4
Economics (Macro)	4	Business and Society	4
Economics (Micro)	4	Business Policy	4
Introduction to Finance	4	Non-Business Electives*	44
Introduction to Marketing	4	Open electives	32

**For International Business majors: 8 Q.H. of this total must be from the international list.*

Accounting Concentration

Professional Preparation

Aims If you are anticipating a career in accounting, your interests probably lie within one of its two major areas: industrial accounting or public accounting. To enable you to obtain some of the professional background necessary to enter these fields, the College of Business Administration offers a variety of financial accounting and managerial accounting courses.

Preparation for a career in accounting encompasses a broad range of activities. These include all phases of record keeping, internal and external reporting, financial planning, cost control, the design and installation of systems and procedures, the application of electronic and other modern business methods to these activities, and managerial decision making.

Accounting is a fast-growing and critical area of business. It is an exacting field that requires men and women who enjoy dealing with facts and figures as well as with people. It requires accuracy and an ability to reason and to interpret business data.

A View of the Five-Year Concentration During your first two years, you will have the opportunity to develop communicative and analytical abilities, to gain an understanding of the nature of accounting, and to survey business as a dynamic institution in an economic setting. Another important activity will be consultation with your coordinator from the Department of Cooperative Education about future work assignments.

Subjects in your third year will include courses in the various functional areas of business (marketing, finance, operations, personnel), statistical analyses, and economic activity.

Whether your choice of employment is in the industrial accounting or public accounting area, you will have the opportunity to prepare through specialized courses in your third and subsequent years. Subjects will include cost accounting, accounting theory, planning and control, auditing, and taxes.

In addition to the sample freshman-year program and basic course requirements listed on page 131, students who concentrate in accounting are required to take the following courses:

II. Professional Requirements

Course	Q.H.
Intermediate Accounting I, II, & III	12
Cost Accounting I & II	8
Accounting Theory and Practice or Accounting Planning and Control	4

Entrepreneurship and New Venture Management Concentration

Professional Preparation

Aims The concentration in Entrepreneurship and New Venture Management (Small Business Management) offers students who plan to operate their own businesses an opportunity to develop skills necessary for the effective management of small enterprises.

Description of the Concentration Have you ever thought about starting, acquiring, and operating your own business? Will you be faced with an opportunity to join a family business upon graduation? Have your views of or experience with large corporations made you think about life in a smaller organization? Or do you think you would get a real kick out of working for a small company and wish to learn more about opportunities with smaller firms?

Are you considering a career in sales management, banking, public accounting, management consulting, or other areas that may involve you directly with owners and managers of new and small companies? For example, a bank loan officer, sales manager, or CPA would often have many entrepreneurs and small-company officers as clients.

If your answer to any of these questions is yes, then you are probably a member of a unique and growing portion of Northeastern students and young people everywhere whose career definition of "doing your own thing" encompasses self-employment or work in a small company or other organization.

A concentration in this field offers you a thorough "start-to-finish" perspective. The concentration provides courses that deal with each of these key questions:

1. What are the characteristics of people who start their own companies, and what does it take to start and build a new business?
2. What are some key sources of business opportunities, and how does one assess feasibility of a particular venture?
3. What sources exist for raising seed capital, and how does one acquire it?
4. What are the critical problems and opportunities in successfully managing a smaller company, and what managerial methods are appropriate to deal with these?
5. What are the key issues in financing and managing an ongoing, growing venture, and how can these be applied to small ventures?

A View of the Five-Year Concentration Courses in this concentration benefit students in several ways. They offer the opportunity to develop an ability to assess personal aptitude and potential for small business, to find and evaluate business opportunities, to secure adequate funding, and to organize and manage the various facets of the small business—marketing, finance, control, and personnel.

Entrepreneurship and New Venture Management presents students with the opportunity to prepare for a career in which they can be involved in the management of a business while maintaining a significant degree of autonomy and independence. Some students will enter this career at graduation or sometimes even before. However, many find that they obtain their first experience through cooperative work and postgraduate employment prior to establishing their own enterprises.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. See page 131.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
New Venture Creation	4	Management of Smaller Enterprises	4
Opportunity Analysis & Venture Capital	4	Small Business Institute	
Small Business Finance	4	Field Project	8

Finance and Insurance Concentration

Professional Preparation

Aims The objective of the Finance and Insurance concentration is to train students for the financial management of businesses, nonprofit organizations, and governmental units. Preparation is twofold: students are offered *information* about current practices, theories, and concepts of financial management and have the opportunity to gain *experience* in analyzing situations that require financial decisions.

Description of the Concentration Almost every phase of economic activity involves aspects of financial management—of cash or other funds and of economic resources available to the individual, the business, or other economic unit.

Perhaps you can visualize your future career in one of the many areas of funds management: security analysis, estate planning, corporate finance and control, financial planning, security or insurance brokerage, underwriting, credit management, and banking. If so, you should consider the Finance and Insurance Concentration.

There are also career possibilities in specific financial institutions that perform indispensable services for present-day business and industry. Among these are banks, insurance companies, investment houses, credit concerns, financial service institutions, mortgage companies, and national and local real estate brokerage firms and appraisers.

Career openings can be sought in all areas of business, industry, and government, where financial planning and operation are vital.

A View of the Five-Year Concentration As a middler, you will take Introduction to Finance and beginning courses in other business fields. Following the introductory course, your required courses are Managerial Finance, Investment Management, and Money and Business Activity. Besides these required courses, many electives are available, including Securities Markets, Small Business Finance, Management of Financial Institutions, and Insurance. In addition, an independent study often may be an appropriate elective.

Specialization occurs in your upperclass years as you take advanced courses in insurance, investments, security markets, and basic business finance. To provide you with a well-rounded education, other courses are available, particularly in the broad area of economics.

All courses offered by the Department of Finance and Insurance are open to students in any concentration provided they have taken the prerequisite subjects. Instructors may waive prerequisite courses in special circumstances.

Subfields

Managerial Finance The two objectives of the finance function in the contemporary corporation or business entity include:

1. Providing needed funds on terms that are the most favorable in view of current planning;
2. Regulating the flow of funds to maximize the realization of objectives.

The key concerns of financial management are the capital structure of the business and the optimal manner in which its assets should be held. With only minor differences, these same broad objectives apply to the finance function of nonprofit organizations, including those in the public sector (units of government).

Management of Financial Institutions This area of specialization is broadly based within the subject area and is applicable to a variety of financial institutions and positions within them.

The three major topics of consideration in this area of specialization are:

1. The institutional structure of the financial system and the relation between it and the surplus and deficit units of the whole economy;
2. Asset, liability, and capital management problems of financial intermediaries;
3. Investment analysis and portfolio management policies appropriate to different financial intermediaries.

Investment and Management Analysis Two benefits result from studying this concentration. First, students can gain a general understanding, which may help them manage their own affairs. Second, those seeking professional careers in organizations where the investment function is paramount (industrial and utility corporations, real estate developments, financial institutions, and many governmental agencies are a few examples) will find this subfield of great assistance.

The concentration offers preparation in the specialized skills and principles that can benefit students who are interested in careers as investment managers or security analysts in the following organizations:

1. Stock exchanges, investment advisory firms, brokers-dealers, underwriters, mutual funds, and other investment companies that are a part of the securities markets;

2. Insurance companies, commercial banks, savings and loan associations, trust companies, mutual savings associations, and organizations involved in the activities of the securities markets; or
3. Federal and state governmental agencies such as the SEC, FDIC, Treasury Department, IRS, and others having regulatory responsibilities regarding the securities markets and their participants.

Insurance and Risk Management Risk management is the process of identifying, measuring, evaluating, and treating important risks. It is a relatively new, but growing, part of the management function in business as well as in government and other nonprofit organizations. Insurance is an important method of risk financing in all organizations, including the family unit. Some individuals may study one or a few courses in insurance and risk management to broaden their understanding of this area in order to better manage their personal affairs or to familiarize themselves with this area as part of their general management preparation. Others may wish to specialize in this area and seek careers in the risk management function in business as managers of corporate employee benefits programs; or as managers, adjusters, or underwriters in life insurance companies, property and liability insurance companies, insurance brokerage firms, insurance agencies, independent adjusting firms; or in a number of other careers in this vast field.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. See page 131.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Managerial Finance	4	Investment Management	4
Money and Business Activity	4	Finance Electives	12

Human Resources Management Concentration

Professional Preparation

Aims Human resources management, which focuses on the effective utilization of people at work, is an extension of personnel and labor relations but includes more than the traditional areas of recruitment, selection, compensation, and training. A human resources manager also must be knowledgeable about manpower planning, equal employment opportunity laws and affirmative action procedures, organizational development, career planning, job design and motivation, leadership, and communications. The ultimate goal of human resources managers is to provide an organization with the people who will be most effective in their jobs.

Description of the Concentration In recent years there has been a growing interest in the quality of the employee's work life and its relation to the efficient production of goods and services. Companies such as Proctor and Gamble, AT&T, General Motors, and Burlington Mills, as well

as a growing number of organizations in the public sector, are paying more and more attention to the quality of human performance at work and the level of human contributions to output. At a time when financial resources and investment capital are becoming scarcer, many organizations are beginning to take a closer look at the management of their people, their most precious resource. In recognition of this growing interest, Northeastern University's College of Business Administration offers an undergraduate concentration in Human Resources Management.

The effective management of human resources calls for a joint partnership among such organizational specialists as personnel administrators, labor relations negotiators, wage and salary analysts, and operating line managers in the various functional areas (marketing, finance, production) of the company. As the traditional role of personnel administration is expanded to include affirmative action programs, job enrichment, and organizational development activities, career opportunities in the fields of labor relations and personnel administration are likely to expand in both the public and private sectors.

For the student whose career aspirations lie in fields other than personnel and labor relations, one important point should be made: human resources management is not a specialized activity confined to the personnel department. Whether you start your career as a work-flow analyst in manufacturing, a customer service assistant in marketing, a field auditor in the accounting department, or a hospital unit manager, you will be required to demonstrate skills in working with individuals and groups to achieve desired results.

A View of the Five-Year Concentration Human resources management is practiced not only by specialists in the area of personnel and labor relations, but also by line managers and specialists in many other business areas. The Human Resources Management concentration is structured to expose students to all major functions of personnel administration and labor relations.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Introduction to Human		Reward Systems	4
Resources Management	4	Human Resources	
Selection and Assessment	4	Management Electives	8
Contemporary Labor			
Issues	4		

International Business Concentration

Professional Preparation

Aims In recent years, several factors have contributed to a rapidly increasing need for qualified people in the field of international business. The growth of multinational firms, international trade, and regional international trading blocs has created a shortage of skilled managers who are equipped to analyze the complexities of international business problems.

The International Business Administration concentration offers students the opportunity to prepare themselves to meet these management

needs. It offers the opportunity to develop an understanding of problems involved in operating business enterprises across national boundaries and to develop the ability to analyze the operations of businesses in multinational environments.

The curriculum consists of a broad education provided by course requirements in arts and sciences, a basic business education provided by business administration core requirements, and a specialized education in International Business.

Description of the Concentration The International Business concentration consists of six courses. Two of them are required: Introduction to International Business and Seminar in International Business. There are also four electives: two from the International Business curriculum and two Business Electives. In addition, two of the nonbusiness electives must be chosen from the International List (see page 139).

When you enroll in the International Business concentration, you will find that its structure is flexible, permitting you to have a dual concentration. For example, you may concentrate in International Business and use open electives to fulfill the requirement of a second concentration. The dual concentration has advantages for those seeking employment opportunities in traditional functional areas (e.g., production, marketing, finance), which also take place in an international setting. All College of Business Administration courses that are offered as part of the International Business Administration concentration are available to students in other concentrations during their middler, junior, and senior years.

A View of the Five-Year Concentration Careers in international business are best pursued in companies that carry on trade or manufacturing operations in foreign countries. An increasing number of multinational firms require that candidates for their top management positions have prior experience in international operations. In addition, large banks and insurance companies want their managers to understand international business. Other types of organizations—government, trade associations, large unions—require international business knowledge. The opportunity for foreign travel in any of these capacities is frequently available.

Students who choose this concentration have the opportunity to gain an understanding of the economic, political, and social constraints on international business and to develop skills in analyzing the financial, marketing, and operational strategies of the multinational firm.

Arts and Sciences electives such as modern languages, political science, international economics, geography, and cultural anthropology—all appropriate to the understanding of international relations—are highly recommended to complement this concentration.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. See page 131.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Introduction to International Business	4	Business Administration Electives (International List)	8
Seminar in International Business	4	Business Electives	8

International Electives

Business List*

- International Accounting
- International Marketing
- International Financial Management
- International Human Resources Management
- The Japanese Company
- Comparative International Management
- Environmental Pressures and the Multinational Corporation
- Cultural Aspects of International Business
- International Transportation and Distribution Management

Non-Business List

(Note: This is a representative listing; other Liberal Arts courses may be taken upon approval by the Area Coordinator for the International Business concentration.)

- Language and Culture
- Individual and Culture
- Evolution and Society
- Culture in Transition
- Political Anthropology
- Economic Anthropology
- Social Change and Economic Development
- Environment and Society
- Introduction to International Relations
- Introduction to Comparative Politics
- Comparative Government
- World Politics
- The Politics of Imperialism
- International Relations
- American Foreign Policy
- International Organization
- International Law
- Europe Since 1921
- Modern France
- Modern Germany
- England Since 1900
- Soviet Russia
- The Modern Middle East
- Modern Africa
- Modern Far East
- The Far East Since 1945
- Recent Leaders of Asia
- Modern European Economic History
- Modern Latin America
- Third World Political Relations
- Issues in Contemporary Islam
- Latin American Art
- Oriental Art II
- Spanish for Business
- German for Business I
- German for Business II
- Economics of World Energy and Primary Resources

**These courses are not offered every year. Students are advised to consult pre-registration material.*

Superpower Economics
 European Economic Development
 Economic History of Less-Developed Countries
 Comparative Economics
 Economic Development
 International Economics

Management Concentration

Professional Preparation

Aims Do your career interests lie in the broad area of administration rather than in specialized fields? The Management concentration offers you the opportunity to prepare yourself for a wide variety of administrative careers in business, government, and nonprofit institutions.

Description of the Concentration As a Management student you must have a basic understanding of all organization functions: accounting, marketing, finance, and operations. Your courses in these areas offer you an overview of these areas, including their interrelation and the ways they can be used as management tools. For example, your study of accounting can be used as a helpful tool in the decision-making process, rather than as a specialty in itself. A similar approach is used in courses in other areas.

Since management is the process of getting things done through people, your professors pay significant attention to "people problems" to stress the importance of developing an effective work force.

The courses in the Management concentration vary considerably in content and method of instruction because they vary in their objectives. In most, students are heavily involved in the conducting of classes and are required to work on group assignments. The purpose of this participatory approach is to help prepare you for the demands of management in the business community.

A View of the Five-Year Concentration The curriculum and teaching methods center around the development of basic skills and knowledge appropriate to administration, rather than upon specialized functional techniques. Although the case method of study is used extensively, a variety of teaching methods consistent with particular course objectives is employed. The basic objectives of the concentration are to confront the student with appropriate learning experiences, to help increase students' skills and knowledge in basic disciplines underlying administrative practice, and to help students develop judgment and skills in organizational problem analysis and decision making.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. See page 131.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Cost Accounting for Management	4	Legal Aspects of Business	4
Introduction to Human Resources Management	4	Business Electives	12

Marketing Concentration

Professional Preparation

Aims A business organization not only designs and manufactures products, but also markets and sells them to manufacturers, wholesalers, retailers, and consumers. This is what a concentration in marketing is all about.

Description of the Concentration All the business activities that direct the flow of goods and services from producer to consumer are classified as marketing concerns. The marketing process begins by determining the needs and wants of customers. Once these wants and needs are established, the organization's first objective is to produce goods or services to satisfy a particular consumer. Essential in all types of business are such activities as product design, research, pricing, packaging, transportation, advertising, selling, and servicing. The overall responsibility for these functions rests with the marketing manager.

The Marketing Concentration offers a wide variety of courses, taught by lecture and class discussion. Included are such courses as Marketing Management, Advertising, Sales Management, Consumer Behavior, and Competitive Strategy.

A View of the Five-Year Concentration Outside the classroom, students may attend weekly meetings of the American Marketing Association Student Chapter, through which they may further their interests by discussing issues with leaders in the field.

Without successful marketing and advertising, industrial products remain unsold. More and more companies are finding that today's tempo of progress and high levels of production require up-to-date marketing techniques to generate a higher sales volume.

As members of the management policy group, marketing executives take a broad view of all aspects of business management and policy. They also serve effectively as trained specialists in their own areas.

Success in the market is vital to every company, whatever its size. Therefore, the need for adaptable and informed marketing management exists in all types of business and industry.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. See page 131.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Marketing Management	4	Competitive Strategy	4
Marketing Research	4	Marketing Electives	12

Transportation and Physical Distribution Management Concentration

Professional Preparation

Aims Transportation is an integral part of national and international distribution systems. It is a determining factor in the availability and prices of goods and services in our economy.

In corporate distribution, transportation specialists operate within a complex organizational framework in which goods are stored and moved. Effective management of this distribution process involves understanding inventory control, warehousing, transportation options, and the interaction of these activities with other functional operations.

Growing concern with the economic and service conditions of the transportation industry has also created career positions with government agencies engaged in transportation policy development and administration. Other career possibilities are to be sought with carriers such as airlines, railroads, and trucking companies, which actively seek people who are familiar with the operational and regulatory aspects of their business.

The Transportation and Physical Distribution Management concentration offers students opportunities to prepare for these diverse career opportunities.

Description of the Concentration The concentration offers the student a balanced background in Transportation and Physical Distribution Management. Courses consider not only the viewpoint of the corporate shipper and carriers, but also those of public officials, in addition to consumer interests. Courses have a strong contemporary orientation and promote frequent interaction with practitioners from business and government.

A View of the Five-Year Concentration Course offerings in Transportation and Physical Distribution Management are sequential so that students who desire only an introductory exposure may take one or several courses as part of a broader business background. An undergraduate concentration in the area consists of six courses. Four are required courses, with the balance of the concentration composed of electives.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. See page 131.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Principles of Transportation	4	Seminar in Transportation	4
Physical Distribution Management	4	Transportation Electives	8
Current Issues in Transportation Policy	4		

Non-Concentration (Self-Designed)

Professional Preparation

Aims Because innovation and relevance are key words in the College of Business Administration, the Non-Concentration curriculum is adaptable to each student's needs. Meeting with an academic adviser, you tailor your academic program to meet your own career goals.

Description of the Concentration Students will be required to select a total of at least six business electives beyond the basic course requirements.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. See page 131.

College of Computer Science

Paul M. Kalaghan, Ph.D., *Dean*

Helen B. Howard, A.S., *Assistant to the Dean*

Professors

Arthur C. Allison, Ph.D.
Harriet J. Fell, Ph.D.
Richard A. Rasala, Ph.D.
Raoul N. Smith, Ph.D.
Patrick S. P. Wang, Ph.D.

Associate Professors

Kenneth P. Baclawski, Ph.D.
Cynthia A. Brown, Ph.D.
John Casey, B.A.
Agnes H. Chan, Ph.D.
Larry A. Finkelstein, Ph.D.
Stephen I. Gallant, Ph.D.
Graham H. Norton, Ph.D.
Viera K. Proulx, Ph.D.
Betty J. Salzberg, Ph.D.

Assistant Professors

Philip F. Carrigan, Ph.D.
Andrew M. Klapper, Ph.D.
Michael Weiss, Ph.D.

Instructor

Lawrence A. Bookman, M.S.

Coordinators of Microcomputer Software Development and Assistant Clinical Professors

Frank R. Campagnoni, M.A.
Russ F. Marsden, M.S.

Professional Preparation

The College of Computer Science offers students the opportunity to concentrate in the broad field of computer science. The program is designed for men and women who are seeking to prepare themselves for productive careers in industry, government, or other organizations that design, develop, market, or utilize computing systems. A fundamental goal of the College is to help students develop the ability to recognize and solve problems arising in the use of modern digital computers in business and engineering as well as in educational and research environments.

In developing the skills necessary to achieve this goal, the student has the opportunity to assimilate ideas and concepts from theoretical studies; in-depth, hands-on programming of both large time-sharing systems and single-user microcomputers; and practical insight gained from the cooperative education experience.

The concentration in Computer Science is offered primarily on the five-year Cooperative Plan because of the inherent value of experience gained in an actual computer-oriented working environment.

Aims Recognizing that the advance of technological innovation casts the computer in ever-widening roles and brings the concept of the "information society" closer to reality, the College has adopted the following aims:

1. To understand the scientific principles that serve as the foundation of computer science;
2. To develop the habits of accurate thinking that are essential to the description and efficient analysis of computer-related problems;
3. To cultivate an awareness of the common features and mathematical bases of a wide variety of computational issues arising in apparently unrelated information-processing applications;

4. To communicate ideas and approaches in a clear and concise manner in a style appropriate to the audience;
5. To maintain an adequate awareness of the pace of information technology in order to lead innovation rather than follow it.

A View of the Five-Year Program Although students of computer science concern themselves, on the surface, with the languages used in writing computer programs, their involvement in the study of software design goes much deeper. Students have the opportunity to study the application of computers to many fields and to consider various approaches to storing maximal amounts of information in a system's storage devices and minimizing the time it takes to retrieve that information. How to select the best computer system for a particular application is of concern. Since errors can accumulate in computer calculations, computer science students are also expected to study ways in which such errors can be detected and minimized. A newly emerging topic is the methodology of program structure and design—a concern directed at determining the best approach to organizing large problems so that the chance for error, the difficulty of detecting an error, and the cost of correcting an error are minimized.

The Computer Science Program is designed in accordance with the recommendations of two large, national professional societies—the Association for Computing Machinery and the Mathematics Association of America. It offers a well-rounded and flexible program in which students are expected to fulfill certain minimum course requirements but are provided an unusually wide selection of electives from which to choose. In this way, students have the chance to plan a program of study according to the particular fields of computer applications most interesting to them.

Specimen Program for Bachelor of Science in Computer Science

First Year

Quarter 1

Calculus I	4
*Physics I	4
Comp. Sci. I (Pascal)	4
English I	4

Quarter 2

Calculus II	4
*Physics II	4
Comp. Sci. II (Pascal)	4
English II	4

Quarter 3

Calculus III	4
*Physics III	4
Soc. Sci./Hum. Elec.	4
Appl. Prog. (COBOL)	4
Prog. Lang. Lab. I (FORTRAN)	1

Second Year

Quarter 4

Calculus IV	4
Assembly Lang. I	4
Data Structures	4
Soc. Sci./Hum. Elec.	4
Prog. Lang. Lab. II (LISP)	1

Quarter 5

Discrete Math.	4
Assembly Lang. II	4
Comp. Org. & Des. I	4
Soc. Sci./Hum. Elec.	4
Prog. Lang. Lab. III (DCL)	1

Third Year**Quarter 6**

Linear Algebra	4
File Processing	4
Comp. Org. & Des. II	4
Coordinated Study	4

Quarter 7

**Probability	4
Operating Systems	4
Coordinated Study	4
Soc. Sci./Hum. Elec.	4

Fourth Year**Quarter 8**

**Statistics I	4
Analysis of Prog. Lang.	4
Automata & Formal Lang.	4
Soc. Sci./Hum. Elec.	4

Quarter 9

Compiler Design I	4
Analysis of Algorithms	4
Coordinated Study	4
Soc. Sci./Hum. Elec.	4

Fifth Year**Quarter 10**

†Comp. Sci. Elective	4
Coordinated Study	4
Coordinated Study	4
Comp. Sci. Project	4

Quarter 11

Coordinated Study	4
Coordinated Study	4
Soc. Sci./Hum. Elec.	4
Comp. Sci. Seminar	4

*Students with a very strong interest in life science may be allowed to substitute General Chemistry I, General Chemistry II, and The Chemical Elements or General Biology, Animal Biology, and Plant Biology if schedule permits fulfillment of the prerequisites for Introduction to Digital Computers I: Design and Organization.

**Students interested in the theoretical aspects of computer science should substitute Probability I and Mathematical Statistics.

†Artificial Intelligence, Computer Graphics, or Data Base Management.

On balance, the program offers a strong foundation in mathematics and a variety of program design and analysis courses. The requirement for seven quarters of social science/humanities electives provides opportunity for students to broaden their horizons and to obtain a cultural context in which to imbed the technical concepts of computer science.

Specimen Program in Computer Science: Effective Date: Fall 1984**First Year****Quarter 1**

Comp. Science I	4
Calculus I	4
Fresh. Writing	4
Western Civilization I	4

Quarter 2

Comp. Sci. II	4
Calculus II	4
Discrete Math I	4
Western Civ. II	4
COBOL Lab	1

Quarter 3

Data Structures	4
Calculus III	4
Physics I	4
Intro. Literature	4
FORTRAN Lab	1

Second Year**Quarter 4**

Physics II	4
Assembly Lang. I	4
LISP	4
Calculus IV	4
DCL Lab	1

Quarter 5

Physics III	4
Assembly Lang. II	4
Discrete Math II	4
Software Design	4

Third Year**Quarter 6**

Comp. Org. & Des. I	4
Linear Algebra	4
Comp. Sci. Elective (1)	4
Elective/Subarea (1)	4

Quarter 7

Comp. Org. & Des. II	4
Probability	4
Comp. Sci. Elective (2)	4
Tech. Writing	4

Fourth Year**Quarter 8**

Comp. Sci. Elective (3)	4
Comp. Sci. Elective (4)	4
Elective/Subarea (2)	4
Elective/Subarea (3)	4

Quarter 9

Comp. Sci. Elective (5)	4
Comp. Sci. Elective (6)	4
Elective/Subarea (4)	4
Computers & Soc.	4

Fifth Year**Quarter 10**

Comp. Sci. Elective (7)	4
Elective/Subarea (5)	4
Elective/Subarea (6)	4
Elective/Subarea (7)	4

Quarter 11

Comp. Sci. Elective (8)	4
Comp. Sci. Seminar	1
Elective/Subarea (8)	4
Elective/Subarea (9)	4
Elective/Subarea (10)	4

Note: Three of the Computer Science Electives must form a complete track.

Awarding of Degree

The Bachelor of Science in Computer Science degree is conferred by the College of Computer Science.

College of Criminal Justice

Norman Rosenblatt, Ph.D., *Dean*

Robert D. Croatti, *Associate Dean*

Robert E. Fuller, *Assistant Dean*

Lester W. McCullough, Jr., *Assistant Dean*

Kathleen M. Higgins, *Coordinator of Educational Services in Forensic Science*

Laurie A. Mulcahy, *Administrative Assistant for Graduate Programs*

Professors

Romine R. Deming, Ph.D.

Theodore N. Ferdinand, Ph.D.

Edith E. Flynn, Ph.D.

Robert Sheehan, M.A., D.Jur.
(Honorary)

Associate Professors

James A. Fox, Ph.D.

Nicole F. Rafter, Ph.D.

John H. Laub, Ph.D.

Assistant Professors

Frank A. Schubert, D.Jur.

Wallace W. Sherwood, LL.M.

Paul E. Tracy, Ph.D.

Professional Preparation

Aims Established in 1966 under a grant from the Ford Foundation, the College of Criminal Justice offers its students the opportunity to prepare for professional careers in the fields of criminal justice and private security; through its prelegal studies concentration, many students also prepare for entry to law school. The curriculum has been designed to offer students a broad academic foundation upon which to base a professional concentration of courses that introduce students to specific career areas. Legal studies, law enforcement, private security, corrections, probation and parole, and forensic science are some of the areas of interest pursued by students. It is also expected that a number of graduates will choose advanced study in academic fields such as criminology, forensic science, social work, public administration, private security, and law, as well as in the entire area of criminal justice.

The College was founded to help prepare students to enter professions that deal with some of the most important social issues of our times. To deal with these issues and to help prepare graduates for careers that are rewarding and beneficial, innovative methods and ideas, as well as the most advanced thinking, are utilized by the College of Criminal Justice. As a reflection of its significant role in higher education, the College has received substantial grants from the Department of Justice and was designated both as a training center in criminal justice and as a center of education and innovation in the field of criminal justice and forensic science.

A View of the Five-Year Program The College of Criminal Justice offers a five-year academic program on the Cooperative Plan of Education, which allows a candidate for the baccalaureate degree to undertake a specialized program of study. It is anticipated that co-op assignments may include work in Parole or Probation Offices, law firms, police departments, private security agencies, public or private institutions, social agencies, prisons, planning and evaluation units, or other areas related to the criminal justice program.

Students are offered a broad educational background for future roles in criminal justice, private security, or law. Because students are preparing for careers involving the social problems of people from all walks of

life, course work in the social sciences, behavioral sciences, and the humanities is integrated with professional courses. The liberal content of the curriculum is highly desirable not only for its value as a foundation upon which general intellectual development may be based, but also as an indispensable educational requirement for professional development.

Graduates must be prepared to judge objectively the many socioeconomic problems inherent in the administration of justice in contemporary American society. The College of Criminal Justice helps to prepare students for a career that will be not only personally productive and rewarding, but intellectually stimulating as well.

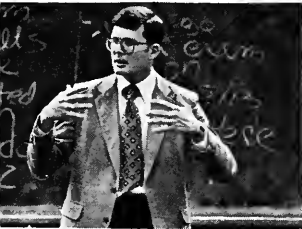
Graduation Requirements

Candidates for the Bachelor of Science degree must complete all the prescribed work of the curriculum, a total of 172 quarter hours of credit.

Students who undertake the Cooperative Education Program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until at least one year of academic work immediately preceding graduation has been completed at Northeastern.

Graduation with Honors



Candidates who have achieved superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University for at least six academic quarters before they become eligible for honors at graduation.

Sample Freshman-Year Program of Studies in the College of Criminal Justice

First Quarter

English
Economics
Introduction to Sociology
Introduction to Law and the
Legal Process

Second Quarter

English
Foundations of Psychology
Introduction to Politics
Critical Issues in Criminal
Justice and Criminology

Third Quarter

Economics
Foundations of Psychology
Introduction to American
Government
Administration of Criminal
Justice

In addition to the above courses, students may elect to take Basic ROTC.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
Principles and Problems of Economics*	8	Introduction to Sociology*	4
Introduction to Politics*	4	Freshman Writing*	4
Introduction to American Government*	4	Introduction to Literature*	4
Foundations of Psychology I & II*	8	State and Local Government†	4
		Western Civilization	8
		Science or Math†	8
		Non-CJ Electives (13)	52

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Administration of Criminal Justice*	4	Constitutional Problems†	4
Critical Issues in Criminal Justice and Criminology*	4	Criminal Justice Research	4
Introduction to Law and the Legal Process*	4	Criminal Justice Electives (9)	36
Criminology†	4		
Criminal Law†	4		

*Courses are usually taken in the freshman year.

†Courses are usually taken in the sophomore year.



College of Engineering

Harold Lurie, Ph.D., *Dean*

Richard J. Murphy, Ph.D., *Associate Dean*

David R. Freeman, Ph.D., *Associate Dean and Director of the Graduate School*

David C. Blackman, M.S., *Assistant Dean and Director of Minority Affairs*

Ralph S. Blanchard, M.S., *Director Part-Time B.S. Program*

Bradford C. Perry, M.Ed., *Director of Student Services*

Paula G. Leventman, Ph.D., *Assistant to the Dean*

Professional Preparation

The College of Engineering prepares students to participate constructively in a technologically changing world, thus contributing as professional engineers to the accumulation and application of new knowledge. Fundamentals are emphasized, thus offering students the opportunity to obtain the basic technical knowledge necessary to practice in a variety of positions. At the same time, study of the social sciences and humanities provides an awareness of the social, economic, political, aesthetic, and philosophical influences that are part of the context in which students will practice their professions.

Aims The concept of education as a continuing, lifelong process necessary for effective work in an environment of constantly new facts, ideas, and scientific principles underlies the whole structure of the engineering curriculum.

Engineering education is directed toward assisting students to:

1. Understand the scientific principles and knowledge of a particular branch of engineering selected;
2. Comprehend and develop competence in the engineering method and its application;
3. Communicate effectively and succinctly the important results of any technical study both verbally and graphically;
4. Acquire the motivation for continuing professional growth.

Day Cooperative Programs

The College offers five-year cooperative programs in Civil, Mechanical, Electrical, Chemical, and Industrial Engineering leading to the degree of Bachelor of Science with specification according to the engineering department in which the student qualifies. The College also offers a General Engineering Program, which leads to the awarding of an unspecified Bachelor of Science degree, through which students have the opportunity to design a curriculum suited to their objectives. The various curricula offer students the opportunity to prepare effectively for employment in industry or postgraduate study.

Under the six programs, several options or specialized concentrations are available:

Electrical Engineering—Power Systems Option To meet the needs of the electric power industry, Northeastern has a special program in Power Systems Engineering. This program is offered on the Cooperative Plan and can lead to both a bachelor's and a master's degree in six years. The subject matter is basically that of electrical engineering augmented by work in power systems analysis, computers in power sys-

tems, nuclear plant considerations, power system planning, protection and stability, and MHD and DC transmission.

Civil Engineering—Environmental Option This option is designed for engineering students intending to work in the field of environmental protection and improvement. Topics included at the undergraduate level are water supply, treatment and wastewater disposal, solid waste disposal, and air pollution. The cooperative program, leading to a bachelor's degree in civil engineering in five years, offers students the opportunity to enter immediately a professional practice in government agencies, industry, or private consulting firms, depending on the job market as well as their own industry and abilities.

Computer Studies The computer, virtually nonexistent thirty years ago, has spawned several of the fastest-growing professions in the world. The demands for people educated in the design and use of computers have reached unprecedented levels in recent years.

Under Electrical Engineering, the Computer Engineering option is concerned with the design of digital computers and their integration within larger systems for communications, resource management, and automatic control. The computer engineering team for a large computer-system development project includes computer architects, software engineers, microprogrammers, logic designers, and electronics engineers. On the other hand, the computer engineer may have sole responsibility for all of these activities during the development of a microprocessor-based instrument or controller. Further details on this program are discussed on page 164, in the section devoted to the Department of Electrical and Computer Engineering.

Graduate programs of study in Computer Science and in Information Systems are offered by the Departments of Electrical and Computer Engineering and Industrial Engineering and Information Systems. These programs are described fully in the Graduate School of Engineering catalog, which can be obtained by writing to the School's director.

Five-Year BS/MS Programs

Several majors (Electrical, Mechanical, and Industrial Engineering) offer programs leading to both the Bachelor's and Master's degrees in five years. Students with outstanding academic records (3.0 or better) may begin carrying extra courses in the third year. In the senior year, these students forgo one cooperative work quarter and attend school full time to complete the course requirements for both degrees.

Part-time Program Offered During Evening Hours

The College of Engineering also offers a six-year, part-time curriculum leading to the degree of Bachelor of Science in Electrical, Mechanical, or Civil Engineering. Classes are held in the evening. Admission and course requirements are the same as for the degree program offered under the Cooperative Plan. For further information, consult the evening bulletin of the College of Engineering, or call the Dean of Engineering's office.

General Description of Programs

The undergraduate academic program begins with three quarters of full-time study. Course work during the first year helps to build students' understanding of mathematics and the physical sciences and to improve their ability to communicate ideas both verbally and graphically.

The freshman courses act as a foundation for upperclass studies and assist students in developing basic understanding of concepts in the engineering sciences and introduce them to the engineering method and its application. About four-fifths of the upperclass program is devoted to scientific and technological study, and about one-fifth to humanistic-social courses, with the aim of balancing the students' growing technical proficiency with an appreciation of the nontechnical aspects of society and culture.

Cooperative work in the chosen branch of engineering begins upon completion of the freshman year and continues throughout the remaining upperclass years. The work assignments during this time may be most valuable in helping to integrate the important elements of both an engineering and a liberal arts education. They can also be instrumental in teaching the value of teamwork while, at the same time, helping the student to acquire insight into the problems of actual engineering practice.

Graduation Requirements

Degrees The College awards the Bachelor of Science degree in Chemical, Civil, Electrical, Industrial, and Mechanical Engineering, as well as the Bachelor of Science degree without specification.

Qualification for Degrees Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify with no academic deficiencies. Students who undertake cooperative work assignments must complete a minimum of four quarters of cooperative work experience approved by the Department of Cooperative Education.

Students transferring from another college or university are not eligible to receive the Bachelor of Science degree until they have completed at least one academic year at Northeastern immediately preceding their graduation.

Graduation with Honors

Candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University at least six quarters before they may become eligible for honors at graduation.

Accreditation

All undergraduate day programs with specification, offered solely by the College of Engineering, as well as the part-time evening programs in Civil and Electrical Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) (formerly the Engineer's Council for Professional Development).

Women in Engineering

Recognizing its opportunities, more women are entering the field of engineering every year. Aware of their qualifications and potential, industry and government provide positions of responsibility for competent women engineers. Any woman with scientific or technical interests should consider the many possibilities offered in engineering.

Women currently account for almost 13 percent of engineering freshmen. Women in engineering are represented with a chapter of the Society of Women Engineers, which offers a full schedule of technical and professional programs.

Minorities in Engineering

Through its Progress in Minorities in Engineering (PRIME) program, the College seeks to expand educational opportunities for qualified blacks, Puerto Ricans, Mexican-Americans, and Native Americans. It can provide scholarships based on merit and/or need. Every effort is made to provide enough aid so that outside work is not necessary during the freshman year. Guidance counseling and tutorial services are among the support services provided by the program.

For more details, contact David C. Blackman, Assistant Dean, Minority Affairs; Rm. 225EB, Northeastern University, Boston, Massachusetts 02115.

Sample Freshman-Year Program of Studies in Engineering

The freshman-year program of studies in the College of Engineering is the same for all designated majors in the College.

First Quarter

FORTRAN Programming
Calculus
Physics
English

Third Quarter

Calculus
Physics
General Chemistry
English

Second Quarter

Graphics and Design
Calculus
Physics
General Chemistry

The first-year pattern of two-term courses may vary according to assigned section.

In addition to the above courses, students may elect to take Basic ROTC.



Chemical Engineering

Elisabeth M. Drake, Sc.D., *Cabot Corporation Professor and Chairperson*

Professor

John A. Williams, Ph.D.

Associate Professors

Ralph A. Buonopane, Ph.D.

Bernard M. Goodwin, Sc.D.

Richard R. Stewart, Ph.D.

Assistant Professors

Francis C. Brown, Ph.D.

Ronald J. Willey, Ph.D.

Lecturers

Huei Luo, M.S.

Mounir Mazzawi, M.S.

Professional Preparation

Aims Since the field of chemical engineering is so varied, the program of study has been designed to offer students broad training in which fundamental principles are stressed, thus providing them with the strong background needed to acclimate themselves readily to graduate school or to an industry of their choice. The faculty also stresses the principles of environmental control, conservation, and societal responsibility to emphasize the importance of the engineer's role in society.

Description of the Major The chemical engineer has been defined as a "professional experienced in the design, construction, and operation of plants in which materials undergo chemical and physical change." It is the task of the chemical engineer to reduce the costs, increase the production, improve the quality of existing products and innovate new products.

Chemical engineering has grown out of discoveries in the chemical laboratories which have served as a foundation for a great many new industries whose production processes involve chemical as well as physical changes.

Petroleum refining, plastics, manufacture of synthetic fibers, and hundreds of other industries require men and women trained in chemistry as well as in engineering. Moreover, much of the training received by the chemical engineer is now being applied to the rapidly developing fields of nuclear engineering, energy, space engineering, and environmental controls. In order to benefit mankind by *not* contributing to pollution or waste of resources, many older industries, such as foods, textiles, paints and varnishes, and leather, are also employing chemical engineers. Computer process controls are being designed to fine tune older plants and computer-aided design of new plants is becoming increasingly common.

A View of the Five-Year Major After students have taken the fundamental courses in chemistry, mathematics, and physics, required of all engineering students, they may go on to advanced courses which apply these fundamentals to the solution of engineering problems. These upperclass courses are a skillful blend of the latest mathematical and theoretical analyses and the practical aspects of the profession.

Chemical engineering is one of the fastest-growing major fields of engineering. Tremendous growth is occurring in research and development, especially in such fields as petroleum and chemicals (about one-third of all chemical engineers are employed in these fields).

Accreditation

The Department is accredited by the American Institute of Chemical Engineers as well as by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology (ABET).

Laboratories

The chemical engineering laboratories are designed to acquaint the student with the experimental approach to the solution of engineering problems and to develop research interests. Graduate research may be conducted in such areas as energy, pollution control, photoreactions, polymers, process control, mathematical modeling, and computer applications.

Students are first exposed to the basic measurements in engineering in experimental methods laboratories, with emphasis on temperatures, pressure, and flow rate. Following this, they are given problems involving such areas as transport properties, kinetics, thermodynamics, and process dynamics, which they must solve experimentally. They are required to design and conduct the experiment, reduce the data using computers, and write a final report. Students use pilot-scale chemical engineering equipment in the experiment, when applicable.

The freshman-year program of studies in the College of Engineering is the same for all majors in the College. See page 154.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
English*	8	Physics†	4
General Chemistry*	8	Physics Lab†	2
Physics*	12	Calculus†	8
Calculus*	12	Mathematical Analysis	8
Engineering Graphics*	4	Economics	8
Computers for Engineering*	4	Social Science/Humanities	
		Electives (4)	16

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Organic Chemistry†	8	Experimental Methods	8
Physical Chemistry	8	Chemical Engineering Thermodynamics	4
Chemical Engineering Calculations†	8	Chemical Engineering Kinetics	4
Polymer Science and Engineering†	4	Process Design or Research Project	12
Transport Phenomena	8	Chemical Engineering Electives (4)	16
Chemical Engineering	8		

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.

Civil Engineering

Mishac K. Yegian, Ph.D., *Associate Professor and Chairman*

Professors

Reginald L. Amory, Ph.D.
 Frederic C. Blanc, Ph.D.
 John J. Cochran, Ph.D.
 Constantine J. Gregory, Ph.D.
 Kenneth M. Leet, Sc.D.

Associate Professors

Leroy M. Cahoon, M.S.
 Menashi D. Cohen, Ph.D.
 Walter E. Jaworski, Ph.D.
 Michael Kupferman, Ph.D.
 Robert L. Meserve, M.S.
 Saul Namyet, B.S.
 James C. O'Shaughnessy, Ph.D.
 Hormoz Pazwash, Ph.D.
 John G. Schoon, Ph.D.
 Richard J. Scranton, M.S.
 Irvine W. Wei, Ph.D.

Assistant Professors

Peter G. Furth, Ph.D.
 Eugene A. Marciano, Ph.D.
 Duc T. Nguyen, Ph.D.
 Spiro N. Pollalis, Ph.D.
 Stanley W. Zagajeski, Ph.D.

Instructors

George H. Brattin, M.S.
 Irwin Silverstein, M.S.

Lecturer

Jack C. Y. Chen, M.E.

Professional Preparation

Aims Civil Engineering is the profession in which a knowledge of the mathematical and physical sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the progressive well-being of mankind. Civil engineers improve and protect the environment; provide facilities for community living, industry, and transportation; and provide structures for the use of mankind. The buildings people live and work in, transportation systems, city and town services, water supply—all reflect creative planning and application of engineering principles on the part of civil engineers.

Civil engineers measure and map the earth's surface and utilize these maps to locate their projects. They design and supervise the construction of bridges, tunnels, buildings, dams, and aqueducts. They build supporting foundations for these and other structures. Civil engineers plan, design, construct, and maintain highways, railroads, canals, and airports. They regulate rivers and control floods; build docks, pipelines, sea walls; develop harbors; design and build plants and systems to bring pure water to homes and factories; design and build systems for sewage and refuse disposal; drain swamps and irrigate arid areas.

A major aim of the Civil Engineering Department program is to provide students with the opportunity to acquire a fundamental, flexible, yet rigorous engineering education so that, in view of inevitable change within the field, graduates will be in a position to build continuously on their basic knowledge. A wide range of electives in the humanities, social sciences, and basic sciences encourages students to investigate areas outside their specific technical focus and to extend their personal interests and involvements.

A View of the Five-Year Major The five-year study curriculum is divided into eleven quarters of school and eight quarters of cooperative work assignments. The work phase is designed to allow the student to

gain insight into all types of activity normally confronted by the civil engineer. Thus, the well-motivated student can determine from these work experiences what further course work preparation will be required to become successful as a practicing civil engineer. The work experience also may be valuable in stimulating a certain amount of self-support and independence.

The first years of the curriculum are, for the most part, devoted to the fundamentals of math, basic sciences, and engineering that comprise the foundation for later professional studies. The final years are devoted to a range of professional subjects, both required and elective. Guidance from a faculty adviser is available throughout the academic program.

The curriculum is thus intended to offer a firm educational background for students preparing for a career in the planning, design, and construction of structures, transportation systems, and environmental systems as civil engineers.

Upon completion of the requirements for the Bachelor of Science in Civil Engineering degree, the graduate may choose to enter the engineering profession or to go on to graduate school for advanced training. The beginning civil engineer will probably find that graduate course work is a prerequisite for advancement.

During the first period of employment as a graduate, the civil engineer may expect to spend some time in the field or the office in work involving design computations, layout work and supervision of construction, or obtaining and analyzing information for studies and reports. With increased experience, the graduate will be better prepared to take on greater challenges and more responsibilities.

Graduates normally seek employment in municipal, state, and federal agencies as well as in private consulting practice, general construction, and industry.

Part-Time Program

The Civil Engineering Program is also available on a part-time basis. The classes are scheduled during the evening hours, usually two evenings per week. The curriculum can be completed in a minimum of six years.

Transfer programs for qualified students with Associate's degrees or Bachelor's degrees in Civil Engineering Technology can be arranged in either the day co-op or the part-time programs.

Student Professional Society

Our Student Chapter of the American Society of Civil Engineers is a very active and professional organization and participation in its activities has proven to be a unique complement to Northeastern's traditional classroom and co-op experience. In addition to traditional activities, which include sponsoring a weekly professional lecture series and occasional field trips to civil engineering construction sites and constructed facilities, members have successfully completed several significant community-service projects valued at approximately a quarter of a million dollars.

The students have developed and designed innovative and educational outdoor play exhibits illustrating both natural and man-made phenomena for the Children's Museum of Boston. They have worked with staff members of the Joseph P. Kennedy, Jr., Memorial Hospital for Children in the planning, design, financing, and construction of a special playground for handicapped children. They have designed and constructed an outdoor amphitheater for the Salvation Army's Camp Won-

derland, and performed an investigation of fire evacuation procedures and building modifications for the Coting School for the Handicapped. The students have designed and constructed a play-therapy center for Boston Children's Services Association and a unique play area for the Language and Cognitive Development Center. Last year, they financed, designed, and constructed a children's group therapy facility with indoor and outdoor components for the Brookline Mental Health Clinic. Each year, at least one such community-service project is undertaken.

In recognition of these unusual efforts, our Student Chapter has been designated as the "single most outstanding" chapter in the nation and consequently has received the Robert Ridgway Award of the American Society of Civil Engineers for an unprecedented six consecutive years.

Computer Facilities

The Civil Engineering Department uses a variety of computer facilities to complement course work and research. Direct access to the University's VAX 11-787 computer is available through numerous soft- and hardcopy remote terminals, while access to the College's Data General mainframe is available through hardwired hookups within the department. The department has two minicomputers (a Hewlett-Packard System 45 with interactive graphics and a Digital LSI-11) for laboratory data acquisition. In addition, Civil Engineering also has a microcomputer facility consisting of IBM personal computers, Apple II's, MAC 8's, and digital plotter, printer, and telephone hookups to the University mainframe. All systems are supported with sophisticated packages with applications to all disciplines of civil engineering.

Laboratories

The Civil Engineering Department has recently relocated to a new, modern building providing expanded and enhanced laboratory facilities.

Soil Mechanics Laboratory The soils laboratory is equipped to perform the full spectrum of soil tests, as well as to conduct model studies.

A wide variety of laboratory equipment permits students to perform tests ranging from those related to soil classification to sophisticated triaxial tests to evaluate the stress-strain properties of a soil specimen. The triaxial tests can be of strain-controlled loading, stress-controlled loading, or a combination thereof. Pore-pressure measurements are made either electronically with pressure transducers or manually with null-pressure indicators.

Consolidation-test equipment of various load ranges and types is available. Consolidation tests applying loads up to 50 tsf on the sample are possible. The laboratory is equipped with a wide range of electronic devices, including pressure transducers, load cells, and accelerometers to expedite data collection.

Research with the aid of models can be conducted to study the problems associated with the design and construction of earth dams, open-braced cuts, and other similar structures. In addition, model studies on the behavior of footings or piles are possible for both static and cyclical loading conditions.

Materials Laboratory The materials laboratory provides for both research and teaching needs. Capabilities are in the experimental determination of the physico-chemical properties of materials. These include destructive and nondestructive strength determinations as well as microstructural and chemical analyses.



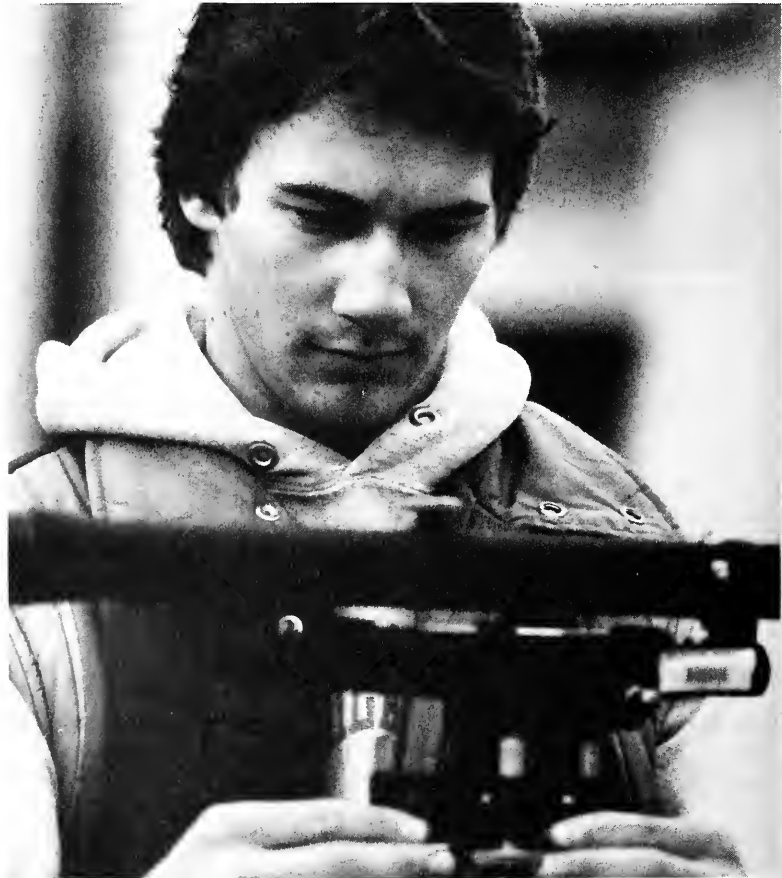
Water-Quality Laboratory Capabilities include analyses of both water and wastewater samples in physical, chemical, and biological regimes. Laboratory and supporting equipment enable complete studies in the following areas: water analysis, wastewater analysis, trace-metal and organic analysis, stream and estuary studies, waste-treatability studies, unit operations, bioassay techniques, pilot plant studies, tracer studies, and complete instrument analysis.

Instrument analysis capabilities include atomic absorption, total carbon, organic carbon, specific ions, gas chromatography, spectrophotometric, and gravimetric analyses.

Special areas are available for unit operation studies in water and wastewater treatment. A well-equipped machine shop has been established so that special equipment can be designed and built for model-prototype studies.

Air Pollution Laboratory Equipment is available to sample ambient air and gaseous and particulate pollutants and to evaluate the physical, chemical, and biological characteristics of atmospheric pollutants. Continuous air samples may be established in any area in Metropolitan Boston and the samples analyzed by ultraviolet-visible, fluorescence, and atomic spectrophotometry, as well as gas chromatography and infrared techniques. A portable carbon-monoxide analyzer with printout equipment is available for measurement studies and research work. Research in air pollution problems is a continuing project.

Recent equipment additions also make it possible to conduct studies in noise pollution.



Basic Course Requirements

The following curriculum has been adopted by the Civil Engineering Department and affects students with expected graduation dates of 1987 and later.

I. General Requirements

Course	Q.H.	Course	Q.H.
English	8	Economics	4
Calculus	20	Math	4
Basic Engineering	8	Communication Skills	4
Physics	16	Social Science/Humanities	
Chemistry	8	Electives (3)	12
Physics Lab	2	General Elective	4

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Computer Applications in Civil Engineering	4	Electrical Engineering	4
Structural Mechanics	8	Applied Probability Theory	4
Fluid Mechanics	4	Steel Design	4
Engineering Economy	4	Dynamics	4
Structural Analysis (w/ lab)	6	Materials (w/ lab)	6
Environmental Engineering I	4	Concrete Design I	4
Soil Mechanics (w/ lab)	6	Engineering Measurements (w/ lab)	6

Professional Electives—7 required

Thermodynamics	4	Legal Aspects of Civil Engineering	4
Hydraulic Engineering	4	C.E. Systems	4
Structural Mechanics III	4	Transportation Analysis	4
Structural Analysis II & III	8	Construction Engineering	4
Concrete Design II	4	Steel Design II	4
Geotechnology	4	Foundation Engineering	4
Environmental Engineering II	4	Environmental Design	4
Environmental & Hydraulics Lab	4	Air Pollution	4
Technology Assessment	4	Highway Engineering	4

The freshman-year program for the College of Engineering is the same for all majors in the College. See page 154.

Electrical and Computer Engineering

John G. Proakis, Ph.D., *Professor and Chairman, William Lincoln Smith Chair*

Professors

Basil L. Cochrun, M.S.
Ladislav Dolansky, Ph.D.
James M. Feldman, Ph.D.
Kenneth I. Golden, Ph.D.,
George A. Snell Professor
Robert A. Gonsalves, Ph.D.
Arvin Grabel, Sc.D.
Martin E. Kaliski, Ph.D.
Harold R. Raemer, Ph.D.
Wilfred Remillard, Ph.D.
J. Spencer Rochefort, M.S.
Sheldon S. Sandler, Ph.D.
Mulukutla S. Sarma, Ph.D.
Martin E. Schetzen, Sc.D.
Walter C. Schwab, Ph.D.
Michael B. Silevitch, Ph.D.
Robert D. Stuart, Ph.D.

Associate Professors

Marcello J. Carrabes, M.S.
J. Duncan Glover, Ph.D.
Richard E. Grojean, M.S.
Wayne G. Kellner, Sc.D.
Walter H. Lob, M.S.
Robert N. Martin, M.S.

Louis Nardone, M.S.
Sheila Prasad, Ph.D.
Michael Rudko, Ph.D.
Joseph Skrzypek, Ph.D.
Analog Career Development

Assistant Professors

Elizabeth E. Ames, Ph.D.
Amir Farhat, Ph.D.
Vinaykumar Ingle, Ph.D.
Francis Kai, Ph.D.
Ahmet Kayran, Ph.D.
John W. Ketchum, Ph.D.
Dimitris Manolakis, Ph.D.
Kaveh Pahlavan, Ph.D.
David Papurt, Ph.D.
Iftexhar Rahman, Ph.D.
William Rutz, Ph.D.
Vinod Sharma, Ph.D.
Chai-Chi Tsui, Ph.D.
Mahmoud Wagdy, Ph.D.

Lecturers

Robert Angus, M.S.
Ali Moezzi, M.S.
Prawat Nagvajara, M.S.
Fred Nohmer, M.S.
Ta Siu, M.S.

Professional Preparation

Aims Among their many achievements, electrical engineers have been primarily responsible for the development of the computer, integrated circuits, the pacemaker, satellite communication, space navigation, microprocessors, television, and the means of providing the energy needed to run our cities and our industries. At present, electrical engineers are working to help find solutions to the problems of information transfer and management, industrial productivity, energy conservation and alternative energy sources, transportation, and health care.

This is just a small sample of the growing wealth of evidence that indicates that electrical engineering has impact on all facets of our culture. As with all branches of technology, the societal functions and aims of electrical engineering are to maintain and improve the quality of life.

Description of the Major Despite the diversity of its application, electrical engineering may be conveniently divided into two broad, general areas of information sciences and energy resources. The area of information sciences is concerned primarily with systems whose function is computation, communication, or control. Included in this area are the circuits and devices that comprise the systems and the application of the systems and engineering techniques to other disciplines. Energy resources deal with problems related to the sources, generation, and distribution of large quantities of electrical energy. It should be noted, however, that no rigid boundary exists between the two areas, and many



of the technical specialties within electrical engineering are applicable to both areas.

Many electrical engineers are involved with the more traditional activities of system design and development, such as the information sciences or energy resources areas. Other electrical engineers apply the knowledge gained in their professional education to such disciplines as ocean exploration, meteorology, experimental psychology, electronic music, health-care systems, bioelectronics, and educational devices for the disadvantaged.

The optimistic outlook for electrical engineering is based on the breadth of the technical activity described above. We are constantly reminded that among the pressing problems in our society are improvement of industrial productivity, the energy crisis, data communication and management, urban transportation, health care, and the plight of the socially and physically disadvantaged.

No one has yet been able to forecast how these problems will be solved without the use of technological resources. Readily available electrical energy, data processing, electronic instrumentation and control, and communication are among the crucial resources needed.

A View of the Five-Year Major The purpose of the curriculum is to offer the student an education that has the breadth and depth necessary for professional practice. Breadth is needed to give the student an awareness of all that electrical engineering encompasses and to provide the necessary background for independent study, a major criterion for professional success. Individual career objectives and initial professional achievement can result, in part, from learning a subject area in some depth. To achieve the balance between depth and breadth, the curriculum is divided into the *core program* and *elective courses*.

The core program includes those courses with content applicable to all specialties in electrical engineering and offers students a basic background for future learning. Subject areas covered in the core program include:

1. Circuits and systems
2. Electronic devices and circuits
3. Digital computer design
4. Electromagnetic theory
5. Electromechanical dynamics (energy conversion)
6. Electrical measurements (laboratories)

The elective courses are designed to permit students to develop their own interests. Many students use this part of the program to learn a particular subject in depth and to better prepare for graduate studies. A broad range of courses is offered, including Digital Computer Techniques, Numerical Methods, Communication Systems, Control Systems, Advanced Electronics, Solid-state Devices, Power Systems, Wave Propagation and Distributed Circuits, Network Theory, and Mathematical Techniques in Electrical Engineering.

In addition, students who wish to conduct individual projects or learn about a subject area not offered in an elective course may enroll in the senior project course and work with an interested faculty adviser on a one-to-one basis.

Electrical engineering graduates of Northeastern have attended and done well at all of the prestigious graduate schools. Those who have entered industry find they compare favorably with graduates of other institutions and many have risen to positions of leadership in their professions.

Five-Year B.S.-M.S. Program

Students with high QPAs may elect the five-year B.S.-M.S. program. By taking some course overloads and forgoing one senior co-op term, a student may complete requirements for both the B.S.E.E. and M.S.E.E. degrees in five years.

Option in Power Systems Engineering

The Power Systems Engineering Program in Electrical Engineering is a special option for those who wish to specialize in energy resources. This program is conducted in cooperation with the electric power companies in New England and other eastern states. The Master's degree can be obtained in six years of cooperative education or through the five-year B.S.-M.S. program described above. For further information about this program, students are advised to contact Dean Philip R. McCabe, Admissions, 150 Richards Hall.

Option in Computer Engineering

Martin E. Kaliski, Ph.D., *Director*

The option in Computer Engineering is provided for those who wish to specialize in the design of digital computers and their integration within larger systems for communications, resource management, and automatic control.

In the design of a digital processing system, hardware and software must be considered as an integrated entity—software cannot be separated from hardware considerations. Thus, the computer engineer must be both a capable programmer and a capable hardware designer. The collective demands of computer engineering plus traditional electrical engineering encompass more knowledge than can be included in a single, highly structured degree program. The solution at Northeastern, as at many other schools, was to adopt a new undergraduate option within Electrical Engineering. The objective of this option is to provide the student with a basic and comprehensive knowledge of the principles that underlie the organization, design, and applications of digital processing systems. It encompasses both the hardware and software design aspects of the system and offers students the opportunity to acquire an understanding of the important relationships and "trade-offs" between the hardware and software components of a digital system. This understanding is necessary in order to create computer systems that satisfy the users' needs at prices they can afford.

The Computer Engineering option follows curriculum recommendations in the report "An Undergraduate Computer Engineering Option for Electrical Engineering" by the Cosine Committee of the Commission on Education, National Academy of Engineering, Washington, D.C. 20418 (January 1970). An important feature of this option is that it leads to a Bachelor of Science degree with specification—a degree in Electrical Engineering accredited nationally by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Laboratories

The seven laboratory courses included in the program are an integral part of the educational process. Their purpose is both to supplement concepts developed in core courses and to introduce the student to design and experimental techniques.

To provide this facet of the educational experience, the Department has laboratory equipment in excess of \$1.5 million. In addition to standard professional laboratory equipment, several specialized laboratory facilities are maintained. These include several small digital computers such as a PDP-11, LSI-11, a number of CRT terminals, and a variety of microprocessors. Programming courses and research programs also use the large computer system at Northeastern's Computation Center.

The freshman-year program of studies in the College of Engineering is the same for all majors in the College. See page 154.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
Calculus*	12	Calculus†	8
Physics*	12	Physics Lab†	2
General Chemistry*	8	L.A. Electives (2)†	8
English*	8	Math Analysis	8
Basic Engineering*	8	Social Science/Humanities	
Physics†	4	Electives	20

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Circuits and Systems I & II†	8	Electronics A & B	8
Circuits and Systems III & IV	8	Field Theory I & II	8
Discrete Systems	4	Material Science	4
Thermodynamics	4	Design and Organization of Digital Computers	4
Mechanics	4	Electronics C	4
Electrical Engineering Lab	8	Electromechanical Dynamics	4
		Technical Electives (4)	16

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

The Electrical and Computer Engineering Department offers a wide variety of technical electives. These enable students to coordinate elective choices to satisfy their personal objectives of breadth or depth. To aid in selection, the elective courses are grouped by discipline.

Technical Electives

Electronic Circuits and Systems

Selected Topics in Electronics
Theory & Tech. of Semicond.
Devices I
Theory & Tech. of Semicond.
Devices II
Senior Project Labs
Control Systems
Communication Theory
Math Techniques in E.E. I & II
Numerical Methods & Computer Applications
Digital Techniques

Electromagnetic Theory

Wave Transmission & Reception
Advanced Topics in E & M
Math Techniques in E.E. I & II
Numerical Methods & Computer Applications
Theory & Tech. of Semicond.
Devices I & II
Senior Project Labs

Computer Sciences

Numerical Methods & Computer Applications
Digital Techniques
Introduction to Digital Computers I & II
Communication Theory
Control Systems
Math Techniques in E.E. I & II
Selected Topics in Electronics
Applied Discrete Analysis
Machine & Assembly Language Programming
Programming Systems
Microcomputer-based Design
Senior Project Labs

Systems Theory

Control Systems
Communication Theory
Math Techniques in E.E. I & II
Numerical Methods & Computer Applications
Digital Techniques
Power Systems I & II
Wave Transmission & Reception
Senior Project Labs

Power Systems Option Leading
to B.S. Degree—5 years
M.S. Degree—6 years

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
Calculus*	12	Calculus†	8
Physics*	12	Physics Lab†	2
General Chemistry*	2	Electives	8
English*	8	Math Analysis	
Physics†	4	Social Science/Humanities	
		Electives (6)	24

 II. Professional Requirements

Course	Q.H.	Course	Q.H.
Circuits and Systems I & II†	8	E.E. Power Lab.	4
Circuits and Systems III & IV	8	Math. Methods in E.E.	4
Thermodynamics	8	Nuclear Engineering	4
Electrical Engineering Lab	4	Technical Electives	4 or 8
Electronics A & B	8	Energy and Public Policy	4
Field Theory I & II	8	Linear Systems Anal.§	4
Transients in Power Systems	4	Anal. of Power Systems	4
Probability§	2	Seminars (2)§	4
Electromechanical Dyn. Mechanics	4	Power Systems Planning§	4
Machines and Systems	8	Special Topics in Power§	2
Electric Power Systems	8	Grad. Electives§	16
Professional Development	0	Computers in Power Systems§	4
		Electric Machine Theory§	2
		Electromagnetic Theory§	4

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

§Graduate courses, not needed for the B.S. degree.

Computer Engineering Option Leading to B.S. Degree—5 Years

Basic Course Requirements

 I. General Requirements

Same as general E.E. except for deletion of one 4-Q.H. required math analysis course and one 4-Q.H. arts and sciences elective.

 II. Professional Requirements

Same as general E.E. except for the deletion of one 4-Q.H. required E.E. course (Electromechanical Dynamics) and the addition of the following required courses:

Course	Q.H.	Course	Q.H.
Introduction to Digital Computers II	4	Machine Language and Assembly Language Programming	4
Programming Systems	4		

Industrial Engineering and Information Systems

Ronald R. Maurant, Ph.D., *Professor and Chairman*

Professors

David R. Freeman, Ph.D.
Lewis H. Geyer, Ph.D.
Wilfred P. Rule, M.S.

Associate Professors

Franklyn K. Brown, M.S.
Richard I. Carter, M.S.
Thomas P. Cullinane, Ph.D.
Surendra M. Gupta, Ph.D.
Carolyn D. Heising, Ph.D.
Stewart V. Hoover, Ph.D.
Thomas E. Hulbert, M.S.
Mieczyslaw M. Kokar, Ph.D.
Robert S. Lang, M.S.
Ronald F. Perry, Ph.D.
Kenneth S. Woodard, M.S.

Assistant Professors

Martin Gardiner, Ph.D.
David S. Goldman, M.S.
Henry H. K. Kung, Ph.D.
Emanuel S. Melachrinoudis,
Ph.D.
Yang B. Park, M.S.
David Rumpf, Ph.D.
Gerald Voland, M.S.

Instructors

Margaret J. Voland, M.S.

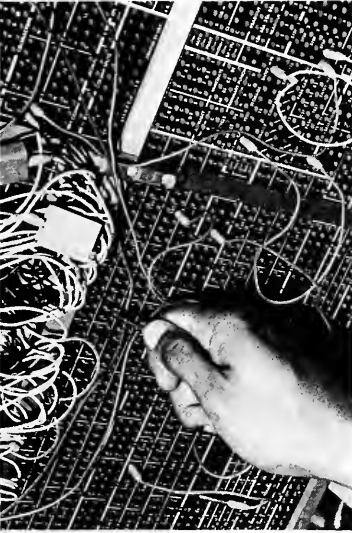
Professional Preparation

Aims Industrial engineers are problem solvers. They formulate strategies and make decisions that involve the utilization of individuals, materials, equipment, and energy to achieve the goals of an organization. Management needs factual information that defines the consequences of alternative decisions. The industrial engineer collects this information and evaluates alternatives to make the decision that best achieves a particular organizational goal. The scope of decisions may involve the entire organization or some portion of it associated with a given product or service.

Traditionally, industrial engineers have been most widely employed in manufacturing organizations, but increasingly they are finding employment in service industries, such as airlines, banks, hospitals, and local and federal government agencies. Courses in the curriculum reflect the industrial engineer's interest in society's changing attitudes about computers, population growth, pollution, and the quality of life.

Another responsibility of the Department of Industrial Engineering and Information Systems is to provide a comprehensive view of engineering. Students are confronted with several problems similar to those they may encounter in professional careers. Methods of problem solving and graphic representation of solutions are emphasized so that students have the opportunity to learn some of the ways engineers communicate through drawings and sketches. The role of an engineer as a creative designer is described by relatively large case studies that show the step-by-step solution to specially chosen problems cutting across several engineering disciplines.

Description of the Major In performing problem analyses, the industrial engineer is concerned with complex, integrated man-machine systems. To treat the machine elements of the system, the industrial engineer requires knowledge of engineering fundamentals. Also necessary is some background in the behavioral sciences to understand how the human elements of the system operate and how they relate to each other and the machines.



A View of the Five-Year Major The program is designed to include extensive course work in mathematics, physics, science, and the engineering sciences. The first two years provide the student the opportunity to build a strong foundation for use in later course offerings.

The required program affords students an opportunity to develop a strong base in probability, statistics, operations research, and computer systems. Courses in work design, personnel and organizational behavior, and engineering economy provide an exposure to the problems frequently encountered in industrial engineering. Elective offerings in the last few years provide an opportunity for students to familiarize themselves with other areas of industrial engineering, such as plant layout, quality control, simulation, management information systems, production and inventory control, and material-handling systems design.

The Computer Students are required to learn computer programming in their first year. In later years, they are asked to model systems and solve complicated problems by computer. The computer is of particular interest to the industrial engineer since many complicated problems, such as assembly-line balancing, mathematical modeling, and industrial simulations, require a computer solution.

Five-Year B.S.-M.S. Program

An accelerated program is available for honor students, allowing completion of the requirements for both B.S. and M.S. degrees in five years through course overloads starting in the third year and the elimination of the senior co-op term.

Laboratories

Integrated Laboratory The new Industrial Engineering Laboratory is an integrated lab used for a variety of different courses. Directly associated with the lab classroom are the computer console room, utilized in a variety of courses; the copying equipment for use in the plant layout courses; and the machine-tool lab for use in work design. Students work as individuals or in groups, depending upon the scope and complexity of the project. Extensive laboratory project work is also conducted on real problems in outside industrial plants and service organizations. Students can view actual operations on occasional plant visits.

Human Factors Laboratory Equipped primarily for experimentation in perception, the facility is used for demonstration and student projects.

Computer Laboratory Numerous microcomputers and minicomputers provide an opportunity for students to gain experience in operating computers and utilizing them for application to actual engineering problems. The department has a large collection of industrial engineering software.

Microprocessor and Manufacturing Systems Lab A laboratory with microprocessors is available for hands-on programming experience in the use of microprocessors in engineering applications. Students may also develop small experimental situations in the use of microprocessors and minicomputers in a manufacturing environment. Robotics experience and study are offered.

The freshman-year program of studies in the College of Engineering is the same for all majors in the College. See page 154.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
Calculus*	12	Physics†	4
Physics*	12	Physics Lab†	2
General Chemistry*	8	Economics I & II†	8
English*	8	Math Electives§	4
Calculus†	8	Effective Speaking	3
Eng. Graph. & Design*	4	Social Science/Humanities	
Comp. for Eng.*	4	Electives	20

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Work Design*†	4	Personnel and Organizations	4
Engineering Science Elective†**	4	Engineering Economy and Statistical Decision Theory	4
Probability Analysis†	4	Engineering Science Electives (5)**	20
Statistics I & II	8	Technical Electives (4)††	16
Industrial Cost Control	4		
Operations Research	8		
Systems Analysis I & II	8		
Simulation	4		

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

§Differential equations or suitable offering of Math Department, with consent of the adviser.

**Five Engineering Science courses are required. They must include:

Principles of Computation and Programming I
Mechanics
Electrical Engineering I

The remaining courses may be selected from:

Principles of Computation and Programming II
Electrical Engineering II
Mechanics II
Flow of Fluids
Thermodynamics I
Materials Science
Microprocessor Programming

††Four Technical Electives are required. Two must be Industrial Engineering electives:

Production Planning
Facilities Design
Quality Control
Management Information Systems
Human Factors
Industrial Relations
Human Considerations in Design
Data Base Management
Microprocessors
Material Handling Systems

Mechanical Engineering

Charles A. Berg, Sc.D., *Professor and Chairman*



Professors

John W. Cipolla, Jr., Ph.D.
 John F. Dunn, Sc.D.
 Arthur R. Foster, M.Engr.
 Alexander M. Gorlov, Ph.D.
 Richard J. Murphy, Ph.D.
 Welville B. Nowak, Ph.D.
D. Smith Professor of Engineering
 John N. Rossettos, Ph.D.
 Joseph J. Zelinski, Ph.D.
 John Zotos, Met. Engr.

Associate Professors

George G. Adams, Ph.D.
 Ralph S. Blanchard, M.S.
 Gregory J. Kowalski, Ph.D.
 Bertram S. Long, M.Engr.
 Mohamad Metghalchi, Ph.D.
 Ernest E. Mills, M.S.
 Uichiro Narusawa, Ph.D.
 Warren G. Nelson, Sc.D.
 Yaman Yener, Ph.D.
 Alvin J. Yorra, M.S.
 Ibrahim Zeid, Ph.D.

Assistant Professors

Hamid Nayeab Hashemi, Ph.D.
 Robert L. Sullivan, Jr., M.S.
 Mohammad E. Taslim, Ph.D.
 John L. Williams, Ph.D.
 Wego Wang, Sc.D.

Lecturers

Mohammad Shishesaz, M.S.
 Mansour Zenouzi, M.S.
 Luis Paz, M.S.

Professional Preparation

Aims Mechanical Engineering is the branch of science broadly concerned with energy, including its transformation from one form to another, its transmission, and its utilization. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of a wide variety of devices, machines, and systems—including complex man-machine systems—for energy conversion, environmental control, materials processing, transportation, materials handling, and other purposes.

Mechanical engineers are engaged in all the engineering functions, including creative design, applied research, development, production, and management. The field of mechanical engineering is broad, providing an excellent professional base for career choice and interdisciplinary activities.

Description of the Major The curriculum is intended to accommodate changing demands on the mechanical engineer by offering a firm foundation in the basic sciences before students direct their studies toward a chosen area of interest.

A View of the Five-Year Major In the first three years, students have the opportunity to learn the basic sciences (mathematics, physics, and chemistry), the engineering sciences (mechanics, thermodynamics, fluid mechanics, and material science), and the humanities. As upper-classmen, they may choose to concentrate their studies in the areas of thermofluid engineering, mechanics and design, or materials science and engineering.

Thermofluid engineering is concerned with the properties and characteristics of the working fluid of machines. For example, the ability of an aircraft to fly depends upon the manner in which air flows over its lifting surfaces. The energy to run a turbine is extracted from the steam or combustion gases that pass through it. The engineer must understand and have a knowledge of the concepts of thermodynamics. The efficiency of a cooling tower depends upon the mechanisms by which fluids transfer heat to surfaces, so the engineer must have a firm grasp of the principles of heat transfer.

Mechanics and design are based upon the fundamental scientific and mathematical tools utilized in the analysis of mechanical configurations as they evolve in the design of machines and power-producing devices. For example, the engineer in the area of mechanics and design may analyze and design structural components for power plants and deep-sea oceanographic vessels or develop new methods for evaluating filamentary composite structures. In the modern machine-tool industry, engineers may be concerned with computer control of machine tools; in the engine industry, they may analyze stresses in components such as turbine blades. To prepare for such challenges, upperclass students have the opportunity to expand their basic knowledge by selecting courses such as Intermediate Strength of Materials, Vibrations, Systems Analysis and Control, Engineering Analysis, Design Fundamentals, and Computer-Aided Design.

Materials science and engineering is concerned with relationships among the structure, composition, properties, and functions of materials and with control of the structure and composition to achieve desired properties. Only recently have engineers come to realize that an understanding of the principles of materials science enables them to design more creatively and with greater freedom than the traditional reference to handbooks. Examples of areas in which mechanical engineers find materials properties a part of the basic design function include: manufacturing techniques, structures (vehicles, buildings), energy conversion, electronic devices (including computers), packaging, and prosthetic devices. Advanced courses are available for those mechanical engineers who desire further knowledge in the materials field.

Five-Year B.S.-M.S. Program

Honor students may take an accelerated program allowing completion of the requirements for both B.S. and M.S. degrees in five years through course overloads starting at the third year and the elimination of the senior co-op term.

Special Information

Mechanical Engineering Laboratories The laboratories in Mechanical Engineering contain equipment ranging from an electron microscope and ultrasonic measuring devices to pumps and weirs. Students working on thermofluids projects may use a turbine, various types of engines, thermoelectric coolers and generators, and a supersonic wind tunnel, to name a few. A material science laboratory provides research microscopes, various furnaces, a fluid-to-fluid extrusion press, X-ray diffraction equipment, electron microscope, and other related equipment. For the mechanics and design areas, vibrations, experimental stress analysis, and materials testing facilities are provided. A continuous effort is made by the Department to update and replace laboratory equipment.

Computers A Computervision CAD/CAM system has recently been installed to allow students hands-on experience in this rapidly emerging technology.

The freshman-year program of studies in the College of Engineering is the same for all majors in the College. See page 154.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
English*	8	Physics†	4
General Chemistry*	8	Physics Lab†	2
Basic Engineering*	8	Math. Analysis	8
Calculus*	12	Social Science/Humanities	
Physics*	12	Elective	4
Calculus†	8	Economics†	4

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Mechanics I & II†	8	Measurement & Analysis	4
Thermodynamics I†	4	Fluid Mechanics	4
Thermodynamics II	4	Materials Science	9
Mechanics III & IV	8	Design	12
Heat Transfer	4	Electrical Engineering	4
Dynamics	4	Research Report	1

Junior and Senior Years

Seven additional technical courses are taken by juniors and seniors plus four social science/humanities electives. Elective offerings are subject to some departmental restrictions. Students should obtain the latest departmental booklet describing these restrictions and current course offerings.

*Usually taken in the freshman year.

†Usually taken in the sophomore year.



Biomedical Engineering

Samuel Fine, S.M., M.D., *Professor and Chairman*

Associate Professor

H. Frederick Bowman, Ph.D.

Professional Preparation

Aims Biomedical engineering is concerned with the scientific principles underlying the physical and biological sciences and their application to problems of biological and medical significance.

Biomedical engineers are engaged in both theoretical and experimental studies either as independent investigators or as members of a research or development group. They may characterize and determine the mechanism of action of natural and synthetic macromolecules, analyze the properties of blood, and/or investigate the structure and function of such organ systems as the nervous system, the respiratory system, the cardiovascular system, or the endocrine system. They may design, develop, market and apply transducers, cardiac pacemakers and defibrillators, heart-assist systems, artificial kidneys and limbs, or diagnostic and therapeutic X-ray equipment. They are important members of the hospital health team.

There is no special curriculum in Biomedical Engineering. Several of the engineering disciplines discussed in this catalog help provide the engineer with a background in the physical sciences. The purpose of the Biomedical Engineering Department is to assist the engineering student, from the freshman year through the senior year, in choosing courses in the biological sciences to complement those in the physical sciences and humanities taken in the standard engineering curriculum.

Courses may be chosen without prejudicing the students' obtaining degrees in their field of engineering specialization. In some cases, courses in the biological sciences can be taken as additional work during the student's career at the University. In other cases, courses in the biological sciences can be taken as electives in the standard engineering curriculum. The opportunity to take these courses is dependent on the student's interests, capabilities, and academic record. It is, of course, limited by possible schedule conflicts.

Students who wish to take an engineering program that includes biological sciences must contact the Biomedical Engineering Department on their arrival as freshmen at the University. This is important since biology is substituted in the first year for graphics.

Education in a program involving the physical and biological sciences offers a sound foundation for future work toward a doctorate in medicine or dentistry, a career in biomedical engineering, or a career as an engineer in a hospital or a government agency such as the Department of Health and Human Services, depending upon such factors as the state of the economy and the student's own industry and overall ability. Industrial organizations, particularly those in the health-care industry, may be seeking individuals with a strong background in engineering supplemented by a biological science education. Other career opportunities may include public health, the psychological sciences, and the marine sciences.

General Engineering Program

Advisory Committee for 1984–1985

Thomas E. Hulbert, M.S., *Industrial Engineering, Chairman*

Arvin Grabel, Sc.D., *Electrical Engineering*

Saul Namyet, B.S., *Civil Engineering*

Richard R. Stewart, Ph.D., *Chemical Engineering*

Alvin Yorra, M.S., *Mechanical Engineering*

Professional Preparation

Aims Engineering and technology influence virtually all areas of endeavor and have a profound effect on the lifestyle and institutions of society. The impact is both cultural and scientific and is manifested by the awareness that solutions to society's problems are, in part, technological. The major purpose of the General Engineering program is to provide flexible, interdisciplinary educational opportunities based on fundamental engineering concepts. The interdisciplinary nature of the program allows the student to develop other areas of interest in which an engineering background is professionally useful.

Description of the Major The program is designed for students whose interests are in engineering-related professions rather than in the traditional profession of engineering. It is expected that the work performed by graduates of this program will encompass the entire spectrum of professional activity, including such typical areas as computers, urban technology, social systems, and health care.

The General Engineering program is highly elective and gives students the opportunity to develop, in conjunction with their adviser, a program designed to meet their own career objectives. To achieve this goal, the student is exposed to the fundamental engineering areas through courses in electric circuits, systems, mechanics, thermodynamics, and materials. These courses are based on principles developed in early courses in mathematics and physics. In addition, because the computer is a basic tool in any technological environment, each student



is required to learn the elements of computer programming. Students completing the adviser-approved program receive an unspecified B.S. degree from the College of Engineering.

Graduate education and continuing education are increasingly important in professional life. By appropriately planning their programs, students will be able to satisfy the course requirements necessary for admission to various graduate and professional schools, including law, medicine, public health, and social sciences, as well as engineering.

A View of the Five-Year Major Each student in the program is required to satisfy the following minimum requirements beyond the freshman year:

- 8 quarter hours in mathematics
- 6 quarter hours in physics (including laboratory)
- 4 quarter hours in circuit theory
- 4 quarter hours in materials
- 4 quarter hours in systems
- 4 quarter hours in thermodynamics
- 16 quarter hours in social sciences (consisting of at least two sequences of two courses each from the areas of sociology, economics, political science, and psychology)
- 8 quarter hours in the humanities, consisting of at least two courses from the areas of art, history, language and literature (not including grammar), music, philosophy, and drama (not including public speaking)

The remaining portion of the program is completely elective but must be designed to fit the student's career objectives. At least 24 quarter hours of course work must be taken in the professional departments of the College of Engineering (Chemical, Civil, Electrical and Computer, Industrial and Information Systems, and Mechanical Engineering).

Beyond the freshman year, students, in conjunction with a faculty adviser, plan their programs. Basically, the elective program permits each student to plan a distinctive and highly individual curriculum.

Although each student is enrolled in a "different program," the goals of each are the same: the breadth of an engineering-based liberal education in combination with the development of professional skills.

Lincoln College

Thomas E. Hulbert, M.S., P.E., *Director, Associate Dean of Engineering*

Jacob Wiren, M.S., P.E., *Assistant Director*

Rasma Galins, *Assistant to the Director*

Richard D. Mansfield, B.S., *Assistant to the Director*

Jane E. DeVoe, M.A., *Counselor*

Professor

Israel Katz, M.S., *Engineering Technology*

Associate Professors

Ernest E. Mills, M.S., P.E., *Mechanical Engineering Technology*

Louis J. Nardone, M.S., P.E., *Electrical Engineering Technology*

Thomas E. Phalen, M.S., P.E., *Mechanical Engineering Technology*

Assistant Professor

Nonna K. Lehmkuhl, M.S., *Computer Technology*

Eric W. Hansberry, M.S., *Design Graphics*

Professional Preparation

Aims Lincoln College offers programs in engineering technology. Although these programs are concerned with the same general fields of engineering specialization, they concentrate on the applications of technology rather than its development.

Emphasis is placed on the rational processes involved in converting theories and ideas into practical techniques, procedures, and products. The engineering technologist works with the professional engineer, scientist, medical doctor, supervisor, and craftsman in converting scientific knowledge and craftsmanship into products and techniques. Fundamentals are related to current practice, providing a supportive "why" for the practical "how." At the same time, study of the humanities and social sciences gives students an opportunity to develop an awareness of the social, economic, and political influences that are part of the real world.

The structure of the Engineering Technology curriculum is based upon the dual need for relevant technical skills and a foundation for future growth. Engineering technology education can assist students to:

1. Understand the scientific principles that govern the current technology of the particular branch of engineering that they select
2. Develop competence in the application of technology to problem solving
3. Communicate effectively the important implications of technological advancements
4. Acquire the motivation for continued development of technical skills

A View of the Five-Year Program Lincoln College offers five-year cooperative programs in Mechanical and Electrical Engineering Technology, and Computer Technology leading to the degree of Bachelor of Engineering Technology.

Since the first year of study is similar for electrical and mechanical engineering technology students, a firm choice of major may be delayed until the spring. At this time, the choice of cooperative work assignments makes a decision mandatory. Due to the unique program designed for computer technology, students must decide on this major during the first quarter of their freshman year. Freshman courses act as a foundation for upperclass studies. About four-fifths of the upperclass program is de-

voted to scientific and technological study and about one-fifth to humanistic-social courses, with the aim of balancing technical proficiency with an appreciation for the nontechnical aspects of society and culture. Cooperative work assignments during the upperclass years are most valuable in helping students to integrate the important elements of both a technical and a liberal education.

Transfer Aerospace Co-op Program Lincoln College is offering, for transfer students, a three-year Bachelor of Engineering Technology degree program with a major in Aerospace Maintenance Engineering Technology. This BET program, in cooperation with East Coast Aero Technical School, is designed for students who have successfully completed an Aircraft and Power Plant Mechanics or similar technician programs. During their three years of study at Northeastern University these students will participate in the Cooperative Education system thereby enhancing the technical classroom education received.

Part-Time Program Offered During Evening Hours Lincoln College also offers six- and seven-year, part-time curricula leading to the degree of Bachelor of Engineering Technology in the following areas:

- Civil Engineering Technology
- Mechanical Engineering Technology
- Mechanical-Structural Engineering Technology
- Electrical Engineering Technology
- Computer Technology

Classes are held in the evenings and generally meet two times per week. For further information on admission to these programs, contact the Lincoln College office at 120 Snell Center.

Graduation Requirements

Candidates for the Bachelor of Engineering Technology degree must complete all of the prescribed work of the curriculum in which they seek to qualify. A total of approximately 180 quarter hours is required for the degree. Students who undertake the cooperative education program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

Students transferring from another college or university are not eligible to receive the degree until they have completed at least one academic year at Northeastern immediately preceding their graduation.

Graduation with Honors

Baccalaureate candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University at least six academic quarters and have earned a minimum of 72 quarter hours of credit before they may become eligible for honors at graduation.

Accreditation

Both the Electrical and Mechanical Engineering Technology baccalaureate day programs, as well as the evening part-time baccalaureate programs in Mechanical, Mechanical-Structural, Civil, and Electrical Engineering Technology, are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), formerly the Engineer's Council for Professional Development.

Facilities

Electrical The electrical engineering technology laboratories are designed to familiarize the student with the experimental approach to solving engineering problems. Boasting a wide variety of modern testing and measuring equipment, the laboratories are an excellent adjunct to the classroom. Here the students may perform experiments, simulate or fabricate systems that have been studied in their lecture courses.

From light machinery and power equipment to microwave precision systems, students plan and pursue their experiments and projects in the laboratory. LSI-11 Digital Equipment computers are available for direct programming or use in other laboratory experimentation. VAX terminals are available in the laboratory for direct access to the University's Digital Equipment VAX mainframe computer. The College of Engineering has recently acquired a new Data General mainframe computer for use in general programming courses. In addition, a number of personal computers are available for student use.

Mechanical The mechanical engineering technology laboratories contain equipment ranging from an electron microscope and ultrasonic measuring devices to pumps and weirs. Students working on thermofluids projects may use a turbine and various types of engines. A material science laboratory provides research microscopes, various furnaces, a fluid-to-fluid extrusion press, X-ray diffraction equipment, electron microscope, and other related equipment. For the mechanics and design areas, vibrations, experimental stress analysis, and materials testing facilities are provided.

Computer facilities available to the mechanical engineering technology student include various microcomputers for in-laboratory analysis. For general programming purposes, students have direct access to the new College of Engineering Data General and the University-wide Digital Equipment VAX computers. A Computervision CAD/CAM systems and the IBM Fastdraft computer-aided drafting system have been installed to allow students hands-on experience in this rapidly emerging technology.

Academic Computer Services

The Northeastern University Computation Center is a support arm to the many computer-oriented curricula of the various departments throughout the University. The Center has been updated with the installation of a third powerful Digital Equipment VAX series system with time-sharing capability. Recently acquired computation equipment include a Data General-MV8000 mainframe computer supporting forty terminals, a Computer Vision-Designer V computer-aided design system with three work stations and the IBM Fastdraft computer-aided drafting system supporting two work stations and an IBM PC. These systems, along with continued development of microcomputer clusters, are designed for both student and faculty use. As the prime computation center necessary in meeting curriculum requirements, the Center is used by the students in the Electrical Engineering Technology, the Mechanical Engineering Technology, the Aerospace Maintenance Engineering Technology, and the Computer Technology programs.

Women in Engineering Technology

Many women enter the technology field each year. Both government and industry provide positions of responsibility for women technologists. Any woman with technical or scientific interests should consider engineering technology as a career.

The freshman-year program of studies in Lincoln College is similar for all majors in the College.

Sample Freshman-Year Program of Studies in Engineering Technology

First Quarter

Algebra and Trigonometry I
Physics I
English/Writing
Engineering Design Graphics I

Third Quarter

Calculus I
Physics III
English/Tech. Writing
Physics Lab II
Engineering Design Graphics II*

Second Quarter

Algebra and Trigonometry II
Physics II
English/Literature
Computer Programming for
Engineering Technology*
Physics Lab I

**Computer Technology students take Introduction to Programming, Basic Computer Organization*

In addition to the above courses, students may elect to take Basic ROTC.

Electrical Engineering Technology

Louis J. Nardone, M.S., *Coordinator for Electrical Engineering Technology*

Professional Preparation

Aims The Electrical Engineering Technology program is directed towards supplying some of the manpower needs of the industrial complex and high technology industries. Because of the nature of high technology industries, close communication and cooperation is required between the technologist and the engineer in forming a viable working team. Students through their cooperative work assignments in industry bear evidence of this need.

In an effort to implement these objectives, the program is designed to provide the student with a broad education through the use of a basic core curriculum. Courses are offered at a high level of theory at the upper end of the technology spectrum. Technical electives are offered to accommodate the student's area of interest.

The higher theoretical level provided in the program also prepares students to continue their education beyond the Bachelor of Technology degree. These continued studies could be toward a Master of Technology degree or, through supplemental course work, to prepare them for more theoretical engineering science subject areas.

Description of the Major Electrical engineering technology deals with the design and operation of equipment and systems related to power, communications, data processing, and electrical control. Its major functions include:

1. The generation, transmission, and distribution of electrical energy for light and power purposes
2. The development and production of equipment for telephone, radio, television, radar, and communication
3. The design and construction of data-processing systems and analog or digital computers
4. The application of electrical and electronic devices in the control of processes and manufacture.

A View of the Five-Year Major Since electrical engineering technology derives many of its fundamentals from developments in the pure sciences, the program of study begins with basic courses in mathematics and physics. In addition, the freshman year includes literature and engineering graphics to aid students in developing the skills with which to express themselves.

In the upperclass years, courses are divided into four related sequences: circuits and systems, including feedback control; microwave devices; energy conversion, emphasizing electromagnetic devices; and laboratory work associated with all of the aforementioned. Current practice is stressed.

In the senior year, electives are offered to ensure that students acquire both depth and specialization.

The freshman-year program of studies in Lincoln College is similar for Electrical and Mechanical Engineering Technology. See page 180.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
Algebra and Trigonometry I & II*	8	Computer Programming for Engineering Technology*	4
Calculus I*	4	Physics I, II, III*	12
Calculus A & B†	8	Physics Lab I & II*	4
English*	12	Social Science/Humanities Electives	20
Principles of Economics	4		
Engineering Design			
Graphics I* & II	8		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Circuit Analysis I & II†	8	Digital Computers I & II	8
Circuit Analysis III & IV	8	Distributed Systems	4
Electronics I, II, III	12	Circuits Lab I†	2
Control Engineering I & II	8	Circuits Lab II	2
Engineering Analysis I	4	Electronics Lab	2
Energy Conversions	4	Advanced Electronics	
Electrical Measurements	4	Lab I, II, III	6
Mechanics	4	Pulse and Digital I	4
		Technical Electives	16

*Courses are taken in the freshman year.

†Courses are taken in the sophomore year.

Mechanical Engineering Technology

Ernest E. Mills, M.S., *Coordinator for Mechanical Engineering Technology*

Professional Preparation

Aims The objectives of the program are to prepare the graduate for technical support activities as a technologist in the broad field of Mechanical Engineering.

The student who has learned the principles of science and mathematics as applied to his or her field will be able to convert theories into practical techniques and processes.

The student will be shown how to effectively communicate this technical information so that he or she may become an integral component of the engineer-technologist-technician design and operations team.

Description of the Major Mechanical engineering technology deals with the use of machinery to harness power resources and perform useful work. In contrast to civil engineering, which deals primarily with static forces and structures, mechanical engineering is more concerned with the motion and kinetics of devices activated by hydraulic, electrical, mechanical, or thermodynamic forces. Major functions of the mechanical engineering technologist include:

1. Design and installation of all kinds of machinery, from pocket watches to the largest steel boring mills
2. Development and production of engines and transport equipment, as in automobiles, aircraft, ships, or railway cars
3. Construction and operation of furnaces and boilers, as well as heating and air-conditioning equipment, for the control of atmospheric and environmental conditions.

A View of the Five-Year Major Since machinery is the predominant concern of the mechanical engineer, the program of study is designed to offer considerable training in the principles underlying the design and operation of engines, power transmission devices, machine tools, and other machinery. This, of course, implies a thorough study of the physical laws concerning motion and transfer of energy. Applied mechanics, thermodynamics, and study of materials will occupy prominent places in the program.

These studies help provide the student with a broad foundation in those fundamental subjects essential to the understanding of current practice. In the junior and senior years, students have considerable elective choice and opportunity for specialization.

The freshman-year program of studies in Lincoln College is similar for Electrical and Mechanical Engineering Technology. See page 180.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
Algebra and Trigonometry I & II*	8	Physics Lab I & II*	4
Calculus I*	4	Engineering Design Graphics I, II	8
Calculus A, B†	8	Computer Programming for Engineering Technology	4
English*	12	Social Science/Humanities Electives	20
Principles of Economics	4		
Physics I, II, III*	12		
Engineering Economy	4		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Mechanics A, B†	8	Mechanical Design A, B	8
Mechanics C	4	Thermodynamics A, B, C, D	14
Stress Analysis A†	4	Fluid Mechanics A & B	6
Stress Analysis B	4	Transfer Labs ABCDE	10
Materials A	4	Refrigeration and Air Conditioning	4
Engineering Design	4	Machine Shop	4
Electricity and Electronics I	4	Technical Electives	15
Measurement and Analysis Lab A	2		

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

Computer Technology

Nonna K. Lehmkuhl, M.S., *Coordinator for Computer Technology.*

Professional Preparation

Aims The Computer Technology program is designed to supply a portion of the manpower needs for the complex computer industry. Graduates of this program may become an integral part of the engineering support team which develops techniques to implement the engineering design project. In this capacity, they become a research and production team which maintains a close cooperation and communication with the engineers.

The program is designed to provide students with both academic and technical learning experience using a basic core curriculum which provides courses in theoretical and technical areas. Students also choose technical electives in their area of interest. Theory courses are offered at the higher levels of the technology spectrum. These higher level theory courses provide the means for students to continue their educational and professional development beyond the baccalaureate level. Some

students may be prepared to pursue the Master of Technology degree or, through supplemental course work, the more theoretical Bachelor of Science degree.

Description of the Major Computer technology deals with the design and application of equipment and systems related to the hardware and software aspects of computers. Its major functions include:

1. Interfacing the computer with process plants or machinery
2. Programming the computer for engineering, scientific, and business applications
3. Designing, engineering, and testing computers
4. Interfacing computers to various types of equipment for automatic drafting, data collection, design, and display.

A View of the Five-Year Major The present-day high-speed computers have been realized through the application of technology developed in the electrical and the electronic field. Because of this interdependence, the program of study for Computer Technology begins, as in Electrical Engineering Technology, with the basic courses in Mathematics and Physics.

An introduction to computer programming and the study of basic computer organization provide an early contact with the major field of study. In addition, the freshman year includes literature and engineering graphics to aid students in developing the skills to express themselves.

In the upperclass years the balance of hardware and software courses, combined with hands-on laboratory experience, provides the student with the opportunity to develop skills for interfacing the computer with various systems or to design computers and the related systems of programs. Current practice is stressed.

The senior year technical electives are offered to ensure that students acquire both depth and specialization.

The freshman-year program of studies in Lincoln College's Computer Technology major is similar to that of the Electrical or Mechanical Engineering Technology, with the exception of courses 09.405 Introduction to Programming and 09.450 Basic Computer Organization. These courses are taken in place of courses 09.400 Computer Programming for Engineering Technology and 09.471 Engineering Design Graphics II.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
Algebra and Trigonometry I, II*	8	Physics Lab. I & II*	2
Calculus I*	4	Engineering Design	
Calculus A, B†	8	Graphics I*	4
English*	12	Introduction to Programming*	4
Principles of Economics†	4	Basic Computer Organization*	4
Physics I, II, III*	12	Social Science/Humanities Electives	16

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Circuit Analysis I, II	8	Advanced Computer Organization	4
FORTRAN	4	CPU Hardware	
Semiconductor Logic	4	Architecture	4
Electronics I	4	Non-Numerical Algorithms	4
Modern Programming Techniques	4	Micro-Peripheral Hardware	4
Computer Logic	4	Numerical Algorithms	4
COBOL	4	Data Communications Methods	4
Assembly Language	4	Industrial Software	4
Introduction to CPU Hardware	4	Industrial Hardware	4
Technical Electives	16	Computer Peripheral Hardware	4

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

College of Nursing

Juanita O. Long, R.N., M.S.N., Ed.D., *Dean*

Joan Grindley, R.N., M.S.N., Ed.D., *Associate Dean*

Diane W. Porter, R.N., M.S., *Assistant Dean*

Angelo J. Logiudice, M.Ed., C.A.G.S., *Assistant to the Dean*

Associate Professors

Jane Aroian, R.N., M.S.N.

Olivia M. Breton, R.N., M.Ed.

Elaine Capozzoli, R.N., M.A.

Janet Carroll, R.N., M.S.

Teresa Chopoorian, R.N., Ed.D.

Ellen T. Daly, R.N., M.S.N.

Flora M. DeScenza, R.N., M.S.

Margaret S. Edmands, R.N.,
Ed.D.

M. Paula Fellows, R.N., M.S.

Jean P. Gilbert, R.N., M.S.

Mary C. Keaney, R.N., M.S.N.,
C.A.G.S.

Jane M. Lee, R.N., M.S.

M. Marcia Lynch, R.N., M.S.

Susan C. Marchessault, R.N.,
M.S.

Geraldine A. Medici, R.N., M.S.

Marilyn M. Smith, R.N., M.S.,
M.B.A.

Joyce E. Tingle, R.N., M.S.

Nancy Walden, R.N., M.S.N.

Mary E. Wilcox, R.N., M.S.

M. Delaine Williamson, R.D.,
M.S.

Assistant Professors

Nancy N. Carr, R.N., M.S.

Sally J. Cloutterbuck, R.N.,
M.S.N.

Lael T. Cutler, R.D., M.P.H.

Nancy E. Lyga, R.N., M.S.

D. Jeanne Otto, R.N., M.S.,
M.Ed.

Maryann L. Ringquist, R.N.,
Ed.D.

Eve Ellen Wise, R.N., M.S.

Karen A. Wolf, R.N., M.S.

Instructors

Jane Armstrong, R.N., M.S.N.

Katherine F. Ciganovic, R.N.,
M.S.N.

Kelly Mayo, R.N., M.S.N.

Professional Preparation

Aims The College of Nursing is committed to preparing professional nurses capable of practicing in a variety of settings. To accomplish this aim, students are provided with a broadly based educational experience which is supportive of both personal and professional growth and provides a foundation for graduate study in nursing. The College of Nursing also provides opportunities for individuals from diversified backgrounds and/or with changing career goals to pursue professional nursing education.

Opportunities for Registered Nurses The College of Nursing accepts Registered Nurses who wish to complete requirements for the Bachelor of Science degree in Nursing. The length of the program varies depending upon the individual's previous educational experience and ability to achieve advance placement through selected testing methods.

A View of the Nursing Program The College of Nursing was established at Northeastern University in 1964. In keeping with its commitment to professional nursing education, the College offers a course of study which emphasizes scientific theory and nursing research, the humanities, and the biological, physical and social sciences. The study of nursing begins in the freshman year. Clinical experience in health care

settings is introduced in the second year of the program. Approximately thirty outstanding hospitals and health-related agencies provide facilities for clinical laboratories.

The College of Nursing was the first in the nation to operate on a cooperative education plan. Beginning in the sophomore year, students alternate periods of academic study with cooperative work experiences.

During periods of employment, students have the opportunity to gain experience in nursing settings. The salary earned during the cooperative work placement accrues totally to the student. Placements are arranged by a nursing coordinator in accordance with agreements made by the University with health care agencies. Cooperative work experiences are available not only in the Greater Boston area but also in selected sites across the country.

Graduation Requirements

Degrees An overall minimum scholastic average of C in both nursing and general studies is required for graduation.

The program is five years in length and leads to the degree of Bachelor of Science in Nursing.

Accreditation

The program of the College of Nursing is fully accredited by the National League for Nursing and approved by the Board of Registration in Nursing of the Commonwealth of Massachusetts.

Licensure

The program is designed to prepare graduates to qualify to take the professional examination for practice as a registered nurse.

Transfer Credit

Students may be allowed to transfer credits earned in courses at other institutions if a grade of C or better has been obtained and if the courses are comparable to courses required at Northeastern University. It is unusual that specific Nursing courses are transferable.

Special Requirements

Health Clearance Every student must have a complete physical examination, including a tuberculin test, prior to registering for first quarter classes. Similarly, proof of immunization against German measles is



required unless a satisfactory antibody titre against German measles is demonstrated.

All students must carry malpractice insurance. Arrangements for this insurance are made by the University. Students in the College of Nursing are required to wear the school uniform in clinical laboratory areas during academic quarters. A modification of the uniform is worn during cooperative work periods.

Sample Freshman-Year Program of Studies in the Nursing Program

First Quarter

Biology
Western Civilization
English
Nursing

Third Quarter

General Chemistry
Anatomy
Western Civilization
Human Nutrition

Second Quarter

General Chemistry
Biology
English
Nursing

NOTE: *Current requirements are now being revised. Information concerning new requirements may be obtained from the Office of the College of Nursing, 102 Robinson Hall.*

Basic Course Requirements: Baccalaureate Degree

I. General Requirements

Course	Q.H.	Course	Q.H.
Biology*	8	Fundamentals of	
Western Civilization*	8	Psychology I & II†	8
English*	8	Social Anthropology†	4
General Chemistry*	10	Principles of Sociology**	4
Anatomy*	4	Social Psychology**	4
Microbiology†	4	Electives (6)	24
Physiology†	8	(includes 8 Q.H. of	
		Humanities)	

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Nursing*	8	Maternal-Child Nursing	9
Human Nutrition*	4	Psychiatric-Mental Health	
Nursing†	12	Nursing**	7
Growth and Development		Community Health Nursing	9
I & II**	8	Issues in Contemporary	
Pharmacology**	3	Nursing	5
Nursing**	7	Introduction to Nursing	
Medical-Surgical Nursing	9	Research	4

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.

**These courses are usually taken in the third year.

College of Pharmacy and Allied Health Professions

Gerald E. Schumacher, Pharm. D., Ph.D., *Dean*

Judith T. Barr, M.Ed., *Associate Dean*

John L. Neumeyer, Ph.D., *Director, Graduate School of Pharmacy and Allied Health Professions*

Joseph F. Palumbo, M.S., *Assistant to the Dean for Student Affairs*

Steven H. Tierney, Ed.D., *Assistant to the Dean for Student Affairs*

Kathleen T. Foley, A.S., *Assistant to the Dean*

Theresa Perry, Ed.D., *Coordinator, Health Careers Opportunity Program*

Professional Preparation

Aims Northeastern University recognizes the increased demand for well-educated pharmacists and allied health professionals. The College of Pharmacy and Allied Health Professions is pledged to meet this need through a unique combination: the Cooperative Plan of Education and a highly innovative academic program designed to offer students the opportunity to prepare themselves to become effective professional practitioners, to enter graduate schools, and to obtain employment in the many areas responsible for the delivery of health care.

A View of the Five-Year Program Fundamental to the College's approach to health-care education are:

1. A curriculum of highly relevant and closely integrated courses in the physical, biological, behavioral, and administrative sciences comprising the basis of modern professional practice;
2. A meaningful involvement in the clinical aspects of patient care via affiliations with teaching hospitals and related institutions;
3. A cooperative work program, including an externship-internship period, and a clinical component offering students the opportunity to acquire the skills and actual experience integral to the total program;
4. A commitment to the search for and advancement of new and progressive concepts, ideas, and philosophies of education and professional practice.

Facilities

The College occupies the Mugar Life Sciences Building on the main campus of the University. Completed in 1963, this multimillion-dollar facility offers proximity to all the academic and extracurricular activities of the University.

The building and the Amelia Peabody Health Professions Center addition, with its well-equipped laboratories and classrooms for both undergraduate and graduate programs, are designed to anticipate the physical needs of a growing and progressive College. In addition to faculty and administrative offices, a Drug Information and Resource Center, a data-processing area, and the graduate school, there are laboratories for radioisotopes, clinical chemistry, medicinal chemistry, drug analysis, prescription pharmacy, hematology, immunology, pharmacology, respiratory therapy, medical record science, and clinical microbiology. Animal rooms and audiovisual capabilities for all programs are also featured in this five-story structure. Research facilities are available for upperclass students who participate in original research projects.

Transfers with Advanced Standing

The College of Pharmacy and Allied Health Professions may accept qualified transfer students who have successfully completed one or more years of preprofessional course work in an accredited college or university.

Degrees Granted

The degrees of Bachelor of Science, Bachelor of Science in Pharmacy, Bachelor of Science in Respiratory Therapy, Bachelor of Science in Toxicology, Bachelor of Dental Hygiene, Associate in Science, and Associate in Science in Dental Hygiene are awarded to qualified candidates.

Accreditation

Each of the programs offered by the College is accredited by the appropriate professional group. The College holds memberships in both the American Association of Colleges of Pharmacy and the American Society of Allied Health Professions.

Health-Care Curriculum Open Option

If you are interested in pursuing a career in the health-care professions but are undecided as to which profession is right for you, then explore the Open Option offered by Northeastern's College of Pharmacy and Allied Health Professions.

A Valuable Foundation The Open Option program offers freshmen a core of courses designed to provide a basic scientific background required for each of the professional programs in the College of Pharmacy and Allied Health Professions. You also are introduced to the basic principles of health-care delivery, health-care agencies and services, and attitudes, behavioral aspects, and policies that may influence health-care systems.

The Advantages The Open Option is especially valuable to students who need assistance in determining an area of interest within the health-care field. By examining various professions, and thus gaining an overview of the discipline, you can refine your health-care career goals. You may also familiarize yourself with what is expected of you in various health-care professions. Subsequent selection of a professional program may proceed more smoothly, an advantage that may help you gain more confidence and certainty in pursuing your degree. Even though in the Open Option you consider various health professions, you still complete some prerequisite courses required of all the professional programs and so do not lose valuable time prior to selecting a major.

The Open Option Plan

In the Open Option Plan, you may complete the core courses in the first-year curriculum without selecting a profession in which to major and without loss of valuable time. Upon satisfactory completion of the first year of courses, you select a professional area in which to major. Professions in the college include pharmacy, health record administration, medical laboratory science, respiratory therapy, and toxicology.

The courses offered in the first-year Open Option include:

- Functions and Basic Calculus
- General Chemistry I and II
- General Biology
- Animal Biology
- Freshman Writing
- Introduction to Literature
- Professional Dynamics in the Health-Care Delivery System

Satisfactory completion of the eight courses in the Open Option core curriculum, as well as other courses completed during the freshman year is necessary for admission to one of the professional programs of the college.

The Open Option Plan does not apply to the Dental Hygiene and Physician Assistant programs.

Dental Hygiene

Associate in Science Degree Professional Preparation

Aims The Forsyth School of Dental Hygienists conducts a program of dental hygiene education in cooperation with Northeastern University. Students in this two-year program attend classes at both the Forsyth Dental Center and Northeastern. The dental hygienist is licensed to render preventive services to a patient under the supervision of a dentist, including administering dental prophylactic treatment, preparing dental radiographs, and teaching prescribed methods of maintaining dental health.

A View of the Program The first year includes courses in anatomy and physiology, chemistry, microbiology, histology, nutrition, dental materials, radiology, periodontology, dental hygiene, and clinical dental hygiene instruction. In the second year, students take general courses, such as English, sociology, and psychology, and professional courses in pathology, public health, pharmacology, dental hygiene, and head and neck anatomy; they also continue to receive clinical dental hygiene instruction.

Degree Students satisfactorily completing the program will receive the Certificate in Dental Hygiene from Forsyth and may elect to receive the Associate in Science degree in Dental Hygiene from Northeastern University. Graduates are required to fulfill the Dental Hygiene licensure requirements in the state in which they intend to practice.

Accreditation

This program is accredited by the Commission on Dental Accreditation of the American Dental Association.

Admissions

Students are admitted directly to the Forsyth School for Dental Hygienists and should contact Forsyth for catalogs and applications by writing to 140 The Fenway, Boston, Massachusetts 02115.

Sample Freshman-Year Program of Studies in Dental Hygiene for the Associate Degree

First Quarter

Human Anatomy and Physiology
Chemistry
Dental Anatomy
Radiology
Dental Hygiene
Clinical Dental Hygiene

Third Quarter

Microbiology
Dental Materials
Periodontology II
Nutrition
Dental Hygiene
Clinical Dental Hygiene

Second Quarter

Human Anatomy and Physiology
Chemistry
Histology
Periodontology I
Dental Hygiene
Clinical Dental Hygiene

Basic Course Requirements for the Associate Degree

I. General Requirements

Course	Q.H.	Course	Q.H.
English Composition and English Literature†	8	Foundations of Psychology I†	4
Chemistry*	8	Sociology†	4
Microbiology*	4	Human Anatomy and Physiology*	10

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Dental Anatomy*	2	Pathology†	3
Radiology*	2	Periodontology*	4
Dental Hygiene**	12	Public Health†	2
Clinical Dental Hygiene**	23	Pharmacology†	2
Nutrition*	2	Head and Neck Anatomy†	2
Histology*	2	Dental Materials*	2
		Independent Study†	2

*These courses are usually taken in the first year.

†These courses are usually taken in the second year.

**These courses are usually taken in both the first and second years.

Bachelor of Dental Hygiene Degree Program Professional Preparation

Aims This program is a two year post-certificate or post Associate degree course of study which is designed to prepare leaders for the challenging world of dental health. Options for majoring in dental research or education are offered to prepare hygienists for advanced positions in administration, community service and industry, as well as research and education.

A View of the Program The curriculum provides liberal arts, science and technical courses, as well as supervised practical experience in each area of specialization. This program consists of six quarters of study over two academic years with both Forsyth and Northeastern University offering the following core courses common to the concentration in either research or education.

Core Courses for the Bachelor of Dental Hygiene Degree

Advances in Oral Microbiology
Advanced Periodontology I and II
Advances in Dental Pharmacotherapeutics
Advances in Cariology
Oral Immunology
Dental Public Health
Dental Seminars
Periodontology Clinic
Expanded Functions Clinic
Fundamentals of Mathematics
Human Development and Learning
Caring for Patients: Psychosocial Aspects of Illness
Introduction to Data Processing for Health Professionals
Applied Health Statistics
Professional Dynamics in the Health Care Delivery System

The concentration in research will require work on a research problem, while students concentrating on education will study curriculum development, teaching procedures, measurement and evaluation. Students in both specializations will have an opportunity for electives.

Degree Students satisfactorily completing the program will receive a Certificate in Advanced Dental Hygiene from Forsyth and the Bachelor of Dental Hygiene degree from Northeastern University.

Admissions Admission is limited to applicants who have graduated from an accredited dental hygiene program and earned a Certificate or an Associate degree. Students may apply for admission during the second year of a two-year dental hygiene program provided they complete the course prior to starting the bachelor's degree program.

Applicants for admission to this post-certificate program are evaluated on past academic record, leadership potential, related dental hygiene work experience, and letters of recommendation. An applicant must have successfully completed the National Board Dental Hygiene Examination and be licensed as a dental hygienist in the United States at the time of matriculation.

Bachelor of Science Degree Programs in Health Science or Education

Graduates of the Associate in Science degree program for dental hygienists may apply to University College of Northeastern University, which offers part-time day and evening courses leading to a Bachelor of Science degree in Health Science.

Graduates interested in health education may apply to transfer into the third year of the Bachelor of Science degree program in Education offered by Northeastern University's Boston-Bouvé College of Human Development Professions.

Health Record Administration

Judith Weilerstein, M.P.H., *Associate Professor and Director*

Assistant Professor

Sheryl A. Rimer, M.P.H.

Professional Preparation



Aims A health record administrator may organize, operate, and manage medical record services. Northeastern's program offers students the opportunity to develop the capability to design health information and retrieval systems; to plan, organize, and direct medical record services; to develop, analyze, and evaluate medical records and indexes; to work with medical and administrative staffs in developing methods for evaluation of patient care; and to participate in research projects utilizing health-care information.

A View of the Five-Year Major In the first two years, the student will concentrate on liberal arts and sciences, including the required human anatomy and physiology courses with an overview of microbiology. Courses in health-care science are offered to help the student prepare for a role in health administration and health-care delivery.

The program offers the opportunity for preparation in administration, in departmental and hospital management and organization, and in electronic data processing. The professional courses in medical record science, medical terminology, and hospital law are complemented by directed applied study in medical record science at an affiliated health facility.

Degree The Health Record Administration program is offered on the cooperative plan. Successful completion of the prescribed curriculum, including directed study at an affiliated health center, will permit the award of a Bachelor of Science degree. Usually, graduates are eligible to take the registration examination given by the American Medical Record Association.

Certificate Program The one-year Health Record Administration Certificate program is designed for candidates holding a baccalaureate or master's degree who desire to enter a new career. The four-quarter curriculum is designed to offer students who have demonstrated leadership potential and self-direction the opportunity to participate in an accelerated program that includes an integrated clinical practice experience. This clinical practice begins in the second quarter and totals more than 300 hours, including a four-week management experience at the conclusion of the last quarter.

Accreditation

The programs are approved by the Committee on Allied Health Education and Accreditation in cooperation with the American Medical Record Association.

Special Information

Students interested in this profession should arrange for an interview with the program director.

Sample Freshman-Year Program of Studies in Health Record Administration

First Quarter

English Composition
Biology
Math
Psychology
Orientation to Health Records I

Third Quarter

Psychology
Modern Language or
Political Science
Microbiology
English Literature

Second Quarter

Biology
Math
Modern Language or
Political Science
Professional Dynamics in the
Health-Care Delivery System

In addition to the above courses, students may choose to take ROTC.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
English Composition and English Literature*	8	Organizational Behavior	4
Mathematics*	8	Introduction to Computer Science	4
Communications	4	Psychology*	8
Biology (General and Animal)*	8	Sociology†	4
Anatomy and Physiology†	10	Modern Language or Social Sciences*	8
Microbiology†	3	General Electives	16
Statistics	4		
Economics or Western Civilization	8		

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.

**Assigned per Program Director.

 II. Professional Requirements

Course	Q.H.	Course	Q.H.
Orientation to Health Records	2	Health Science Education Applied Study	2 9
Health Records Science I-IV	16	Hospital Organization and Management	4
Medical Terminology	4	Application of Medical Computers	4
Foundations of Medical Science	6	Quality Assurance	4
Hospital Law	2	Independent Study	4
Management of Health Record Services	12	Special Topics**	4
Applied Health Statistics	4	Health Record Professional	2
Clinical Seminar	2	Professional Dynamics in the Health-Care Delivery System*	4
Seminar in Medical Records	2		

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.

**Assigned per Program Director.

Medical Laboratory Science Medical Technology

Gerald L. Davis, Ph.D., *Associate Professor and Director*

Professor

James J. Gozzo, Ph.D.

Associate Professors

Judith T. Barr, M.Ed.

Britta L. Karlsson, M.S.

Assistant Professors

John Klaas II, Ph.D.

Elizabeth G. Szymczak, M.S.

Professional Preparation

Aims Medical technology involves the application of principles of natural, physical, and biological sciences to the performance of laboratory determinations used in the diagnosis and treatment of disease and the maintenance of health. It is projected that the demand for properly educated and certified medical technologists and medical laboratory technicians will increase as a result of greater emphasis on the quantity, quality, and efficiency of health-care delivery. With educational opportunities available in hematology, immunohematology, clinical chemistry, and clinical microbiology, students have the opportunity to prepare themselves for positions not only in a hospital laboratory but also in research, industrial, and governmental institutions. Related co-op work experience in hospitals, clinics, research and industry helps prepare the graduates well for a variety of positions in the working world. Since 1976 opportunities for six months of co-op work experiences in foreign countries have been available to interested students. These have been an enriching experience for the participants.

For qualified graduates, additional opportunities may be found in laboratory administration, education, and graduate programs.

A View of the Five-Year Major Students enter the College in the Medical Laboratory Science program (medical technology). The College offers a five-year modified cooperative course of study leading to the degree of Bachelor of Science. Upon satisfactory completion of the baccalaureate degree, the student should be eligible to take national certification examinations in medical technology and clinical laboratory science. Some states may require additional licensure examinations.

During the junior and senior years, qualified students are assigned to the hospital components of the medical technology program. To qualify for entrance into the hospital component of the program, students must have an acceptable grade point average; have completed successfully all University course requirements, including those in biology, chemistry, mathematics, and medical laboratory science; and have met other criteria established by the Clinical Studies Admission Committee. The professional courses in hematology, pathogenic microbiology, serology, mycology, parasitology, clinical chemistry, instrumentation, and blood banking are included in both the University and the hospital components of the program.

Students in the five-year major who decide not to complete their course of study may transfer into the three-year Associate degree program. In addition, through the Graduate School of Pharmacy and Allied Health Professions, programs leading to the Master of Science and Doctor of Philosophy degrees are offered.

Degree The degree granted is the Bachelor of Science.

A View of the Three-Year Major Students enter the College of Pharmacy and Allied Health Professions as Medical Laboratory Science (Medical Laboratory Technician) majors. This three-year modified co-op program leads to an Associate degree.

The first two years of academic study parallel the baccalaureate program. During the third year students alternate related co-op work experience with clinical applied studies at affiliated hospitals.

During the middler (third) year, qualified students are assigned to the hospital components of the Medical Laboratory Technician program. To qualify for entrance into the hospital component of the program, students must have an acceptable grade point average; have successfully completed all other requirements of the program; and have met the criteria as defined by the program.

Upon completion of the professional component of the program, students are eligible to write national certification examinations for medical and clinical laboratory technician.

Degree The degree granted is the Associate of Science degree.

Accreditation

The Associate in Science and the Bachelor of Science degree programs are accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association.

Sample Freshman-Year Program in Medical Laboratory Science**First Quarter**

Math or Calculus
 General Chemistry
 General Biology
 English Composition
 Medical Laboratory Science
 Orientation I

Second Quarter

Math or Calculus
 General Chemistry
 Animal Biology
 Professional Dynamics in
 the Health-Care
 Delivery System
 Medical Laboratory Science
 Orientation II

Third Quarter

Electives
 English Literature
 Basic MLS Urinalysis
 Analytical Chemistry

Basic Course Requirements for the Baccalaureate Degree**I. General Requirements**

Course	Q.H.	Course	Q.H.
English and English Literature*	8	Genetics and Developmental Biology	4
Biology—General and Animal*	8	Physics	10
Math or Calculus*	8	Microbiology	3
General Chemistry*	10	Humanities Electives	12
Organic Chemistry†	10	Social Science Electives	8
Analytical Chemistry*	4	General Electives	12
Physiology†	8	Professional Elective	4
Cell Biology	4		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Medical Laboratory Science Orientation I, II*	2	Clinical Chemistry II, III, IV	6
Basic M.L.S. Urinalysis	3	Clinical Microbiology II, III, IV	6
Basic M.L.S. Hematology I†	3	Applied Study (at hospital)	21
Basic M.L.S. Hematology II†	3	Laboratory Management	2
Basic M.L.S. Immunohematology and Serology†	6	Health Science Education	2
Basic M.L.S. Chemistry and Instrumentation†	5	Parasitology	3
Basic M.L.S. Clinical Microbiology†	6	Mycology	3
Hematology III	3	Senior Seminar	2
Immunohematology II	2	Special Topics	2
Hematology IV	2	Professional Dynamics in the Health-Care Delivery System*	4
		Epidemiology	4
		Immunology	5

Basic Course Requirements for the Associate Degree**I. General Requirements**

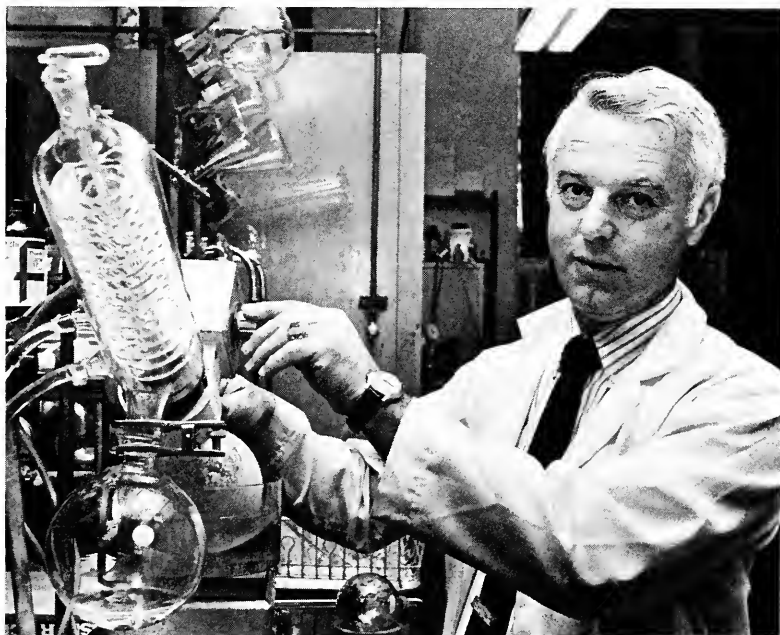
Course	Q.H.	Course	Q.H.
English and English Literature*	8	Analytical Chemistry*	4
Biology—General and Animal*	8	Physiology†	8
Math or Calculus*	8	Humanities Elective	4
General Chemistry*	10	Computer Science Elective	4
		Elective	4

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Medical Laboratory Science Orientation I and II*	2	Basic M.L.S. Clinical Microbiology†	6
M.L.S. Urinalysis	3	Basic M.L.S. Immunohematology and Serology†	6
Basic M.L.S. Hematology I†	3	Basic M.L.S. Clinical Chemistry and Instrumentation†	5
Basic M.L.S. Hematology II†	3	Applied Study (at hospital)	12
Professional Dynamics in the Health Care Delivery System	4		

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.



Pharmacy

Richard C. Deth, Ph.D., *Associate Professor and Director*

Medicinal Chemistry Section

Robert N. Hanson, Ph.D.,
*Associate Professor and
Section Leader*

Professors

Roger W. Giese, Ph.D.
John L. Neumeyer, Ph.D.
Robert F. Raffauf, Ph.D.

Assistant Professor

Gerald S. Jones, Jr., Ph.D.

Pharmaceutics Section

Mehdi Boroujerdi, Ph.D.
*Assistant Professor and
Section Leader*

Assistant Professors

Sara E. Rosenbaum, Ph.D.
Harry Suryakusuma, Ph.D.

Pharmacology Section

Norman R. Boisse, Ph.D.,
*Associate Professor and
Section Leader*

Professors

O. James Inashima, Ph.D.
Elliot Spector, Ph.D.

Assistant Professor

Barbara L. Waszczak, Ph.D.

Pharmacy Practice Section

Larry N. Swanson, Pharm.D.,
*Associate Professor and
Section Leader*

Professors

Arnold S. Goldstein, L.L.M.
Gerald E. Schumacher,
Pharm.D., Ph.D.

Associate Professor

Samuel J. Matthews, Pharm. D.

Assistant Professors

Barbara Ameer, Pharm.D.
Barry A. Bleidt, Ph.D.
Robert J. Cersosimo, Pharm.D.
Donna L. Goolkasian, Pharm.D.
Michael Montagne, Ph.D.

Professional Preparation

Aims The need for well-qualified pharmacists is likely to continue in direct response to the greater emphasis on health care and, in particular, to the newer and more diversified utilization of those now in practice in this country. The majority of pharmacists are associated with community practice, and some of these are self-employed. Hospital pharmacy and institutional practice have attracted a large number of practitioners and represent the fastest-growing areas of the profession. The increased use of the pharmacist as a drug consultant to the medical and nursing staffs of these institutions has broadened the scope of professional opportunity and given practitioners even greater involvement as part of the health team.

Pharmacy also offers careers in research, manufacturing, government, law enforcement, and education. A considerable number of our graduates have entered leading graduate and professional schools. Another significant trend is found in the increasing number of women entering the profession. Approximately 60 percent of the entering class is now composed of women.

A View of the Five-Year Major The College offers a five-year curriculum that leads to the degree of Bachelor of Science in Pharmacy. The curriculum offers instruction in each of three natural divisions: (1) arts and sciences courses in general education (the humanities and social sciences); (2) mathematics and the basic physical and biological sciences; and (3) courses in the areas of professional instruction—medici-

nal chemistry, pharmacology, pharmaceuticals, pharmacy administration, pharmacy practice, and clinical pharmacy.

The curriculum offers a well-balanced blend of academic classroom and cooperative education work experiences. Students completing the five-year baccalaureate pharmacy degree at Northeastern complete up to 3,000 hours of combined co-op and clinical clerkship experiences. These experiences, we believe, enable our students to easily make the transition into pharmacy practice upon graduation. The classroom experience is well-structured and allows for the integration of the students' cooperative learning experiences. As is the case with other pharmacy programs across the country, the curriculum is five years in length, but with a much greater practical experience base. The pharmacy program maintains close affiliations with many of the leading hospitals in the surrounding Boston area.

In addition, through the Graduate School of Pharmacy and Allied Health Professions, programs leading to the Master of Science and Doctor of Philosophy degrees are offered. A graduate program in clinical pharmacy leading to the Doctor of Pharmacy (Pharm.D.) degree is also available for a limited number of qualified baccalaureate graduates.

Graduation Requirements

Degree Candidates for the Bachelor of Science in Pharmacy degree must complete all prescribed work of the curriculum and meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until the last three years of academic work immediately preceding graduation have been completed at Northeastern. Exceptions to this requirement may be made for students transferring from another college of pharmacy.

Graduation with Honors

Candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University for at least six quarters before they become eligible for honors at graduation.

Accreditation

The undergraduate pharmacy program offered by the College of Pharmacy and Allied Health Professions subscribes to the standards established by the American Council on Pharmaceutical Education and the American Association of Colleges of Pharmacy, of which it is a member.

Licensure—Pharmacy

Pharmacists must meet certain requirements to obtain a license from the state in which they wish to practice. These requirements ordinarily include graduating from an accredited college of pharmacy, passing an examination given by a State Board of Pharmacy, and completing an "internship," or apprenticeship.

The internship is a period of supervised practical experience in a preceptor pharmacy. This is generally satisfied during the cooperative work periods commencing at the end of the student's second academic year. The salary earned during these periods of full-time employment may be used to help defray educational expenses. Students may apply up to 400 hours of the required academic clinical clerkship experience to their internship requirements. In addition, a college-directed externship adds to the total practice-oriented portion of the curriculum.

Sample Freshman-Year Program of Studies in Pharmacy**First Quarter**

Basic Calculus*
 General Chemistry
 Arts and Sciences Electives

Third Quarter

Biology
 English
 General Chemistry
 Arts and Sciences Elective

Second Quarter

Calculus
 Professional Dynamics in the
 Health-Care Delivery System
 Biology
 English

**Students who are not adequately prepared may need to take other math courses.*

In addition to the above courses, students may choose to take Basic ROTC.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
Basic Calculus*	4	Organic Chemistry†	10
Calculus*	4	Anatomy-Physiology	10
General Chemistry*	10	Biochemistry	5
English*	8	Arts and Sciences	
Biology*	8	Electives (7)	28
Physics†	8	Social Psychology†	4

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Basic Pharmacy†	3	Professional Electives (2)	8
Pharmaceutics I & II, including Laboratory	11	Professional Practice Lab	1
Medicinal Chemistry/ Pharmacology I-III	16	Clinical Pharmacology- therapeutics	5
Drug Analysis	5	Pharmacokinetic Principles in Drug Therapy	4
Drug Information & Evaluation	3	Caring for Patients: Psychosocial Aspects of Illness	4
Pathology	4	Pharmacy Management	4
Toxicology	4	Anti-Infectives	5
Biopharmaceutics/ Pharmacokinetics	4	Parapharmaceuticals	2
Pharmacology Lab I & II	2	Non-Prescription Medication	4
Jurisprudence	4	Interpersonal Skills for Health Professionals	4
Pharmacy Administration	4	Pharmacy Externship	4
Clinical Pharmacy Clerkship	15		
Professional Dynamics in the Health-Care Delivery System*	4		

**These courses are usually taken in the freshman year.*

†These courses are usually taken in the sophomore year.

Toxicology

David R. Brown, Sc.D., *Associate Professor and Director*

Associate Professor

Robert A. Schatz, Ph.D.

Professional Preparation

Aims Toxicology is the study of the injurious effects of substances on living organisms. It is often considered a subdivision of pharmacology, the study of chemical interactions between substances and biological systems. Toxicology can be considered as the science that defines the limits of safety of chemicals and other substances. Thus, one of the chief responsibilities of the toxicologist is prediction. By gathering sufficient data on the identification and toxicity of materials and adequate knowledge of the mechanisms by which effects are produced by materials, the toxicologist can make reasonable predictions of their hazard and impact in the biosphere.

The activities and contributions of toxicologists are many and varied. The profession's subdivisions of materials, radiation, and veterinary toxicology illustrate the diversity of investigations in which toxicologists may participate. The toxicologist working in the biomedical area is concerned with intoxications by drugs and other chemicals as well as the demonstration of drug safety or danger prior to release on the market.

Clinical toxicologists may be involved with:

1. antidotal treatment of poisoning
2. drug abuse, addiction, and detoxification
3. drug monitoring and drug interactions
4. teratogenesis (drug-induced birth defects) and other toxicity-screening procedures

Industrial or environmental toxicologists are concerned with the recognition, identification, and quantitation of relative hazard from occupational or public exposure to toxicants. This concern is closely related to private and government responsibilities to ensure the safety of workers and the general public in contact with industrial and commercial products.

Industrial or environmental toxicologists may be involved with:

1. chemical carcinogens
2. pesticides or other "economic poisons"
3. air, soil, and water pollution
4. food additives

Forensic toxicology is a hybrid of analytical chemistry and fundamental toxicological principles, and is concerned with the medicolegal aspects of the harmful effects of chemicals.

Forensic toxicologists may be concerned with:

1. the cause of death in postmortem investigations
2. isolation and detection of toxicants in biologic material
3. drug-abuse monitoring programs
4. medicolegal aspects of poisoning

The faculty of Northeastern University's College of Pharmacy and Allied Health Professions feels that increased concern over the safety of drugs, chemicals, and cosmetics in the human population and in the

environment, as well as new legislation regarding toxic substances, creates a high demand for toxicologists at the Bachelor of Science level. One of the College's principal goals is to help train qualified professionals who will strive to meet the health-care needs of society. The concept of an undergraduate degree in toxicology is brought about by the demands of an increasingly complex chemical environment. Currently, few institutions offer B.S. degrees in toxicology, although more schools are planning such programs. Yet there is an estimated need for 5,000–10,000 people with bachelor's degrees to act as technical support staff for Ph.D.-level toxicologists.

Northeastern University has created an innovative program in which its diverse academic resources offer training to this new breed of toxicologist. The core curriculum is enhanced by contributions from the University's Institute of Chemical Analysis, Applications, and Forensic Sciences, the Northeastern University Marine Science Institute in Nahant, and the Environmental Engineering faculty.

Recent manpower studies sponsored by private and federal agencies predict a great demand for toxicologists. Although a need for toxicologists existed prior to 1970, the introduction of numerous federal and local laws aimed at protecting the environment, safeguarding employees in their workplace, and protecting consumers against hazardous household products has created a critical shortage of toxicologists. Employment opportunities are being created in industry (chemical, cosmetic, and pharmaceutical firms) and government (for example, Environmental Protection Agency, Food and Drug Administration, National Institute of Occupational Safety and Health) as well as in police departments and various clinical settings. Students may also consider entering graduate programs in toxicology.

A View of the Five-Year Major The Toxicology program leads to the Bachelor of Science degree in five years under the cooperative plan. The curriculum is a combination of liberal arts, science, and professional courses that offer students the opportunity to prepare themselves to practice toxicology in a variety of settings. Required and elective professional courses may be selected from Medical Laboratory Science, Chemistry, Biology, Sociology, Criminal Justice, Computer Programming, Mathematics, and Earth Sciences.

Toxicology students begin their cooperative experience in the sophomore year.

Degree The degree granted will be the Bachelor of Science in Toxicology.

Sample Freshman-Year Program of Studies in Toxicology

First Quarter

Mathematics

Elective

Biology

English

Second Quarter

Calculus

General Chemistry

Biology

Elective

Professional Dynamics in the
Health-Care Delivery System

Third Quarter

Calculus

English

Arts and Sciences Elective

General Chemistry

In addition to the above courses, students may choose to take Basic ROTC.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
Math*	4	Anatomy-Physiology†	10
Calculus*	8	General Biochemistry	5
General Chemistry*	10	Microbiology	4
English*	8	Biostatistics and	
Biology*	8	Computers†	4
Physics†	8	Identification of Organic	
Organic Chemistry†	10	Compounds	3
Environmental Problems†	4	Instrumental Analysis	5
		Electives	44

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Drug Analysis	5	Drug Interactions	4
Medicinal Chemistry/ Pharmacology I-III	16	Public Health	4
Pathology	4	Epidemiology	4
Toxicology I, II, III, IV	16	Medical Laboratory Science	5
Pharmacology Laboratory I, II	2	Professional Dynamics in the Health-Care	
Toxicology Laboratory	3	Delivery System*	4

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.

Physician Assistant

Suzanne B. Greenberg, M.S., *Director*

Donald Wexler, M.D., *Medical Director*

James L. Lontine, B.A., PA-C, *Clinical Coordinator*

Professional Preparation

Aims This is a program for the education of the primary-care physician assistant, a skilled person qualified by academic and clinical training to provide patient services under the supervision and responsibility of a doctor of medicine. The Physician Assistant may work in a variety of settings, such as a physician's office, clinic, hospital, or nursing home. It is expected that the Physician Assistant will be able to do at least the following: elicit a detailed and accurate history, perform a physical examination, perform routine procedures such as the drawing of blood samples, give injections, suture and care for wounds, counsel the patient on matters relating to health, and provide evaluation and treatment in life-threatening emergencies.

A View of the Major This twenty-two-month program, which begins in September, includes didactic work and clinical rotations in medicine, surgery, pediatrics, emergency medicine, psychiatry, obstetrics and gynecology, and primary care at teaching hospitals, clinics, health centers, and private physicians' offices. Students have the option of selecting up

to two weeks of elective rotations in disciplines such as cardiology, dermatology, neurology, radiology, and the like. Upon satisfactory completion of the program, students will be awarded a certificate by the University and are eligible to take the National Certifying Examination given by the National Commission on Certification of Physician Assistants. Some states require successful completion of this examination in order to practice.

Special Requirements Applicants to the program must have earned a bachelor's degree and have taken courses in chemistry and biology with laboratories at the college level. In addition, successful applicants must have had at least one year of direct, hands-on, patient-care experience.

Scholastic Aptitude Test scores are required for applicants. Application materials may be obtained by contacting the Physician Assistant Program Office at 202 Robinson Hall or by telephoning (617) 437-3195.

Accreditation

The Physician Assistant program meets the requirements established by the Council on Medical Education of the American Medical Association for an approved educational program to provide students an opportunity for training as primary-care physician assistants. Membership in the Association of Physician Assistant Programs is maintained. The program is also approved by the Massachusetts Board of Approval and Certification of Physician Assistant Programs.

Other Information

Lecturers for the program include faculty from the medical schools at Harvard, Tufts, and Boston Universities. Beginning in the fall, 1984, students admitted to the Physician Assistant Program may have the option of applying for admission to the Master of Health Professions degree program. Additional course work and a comprehensive examination will be required.

Sample First-Year Program of Studies in the Physician Assistant Program

First Quarter

Human Anatomy
Basic Medical Laboratory
Science
Pathophysiology and Medicine I
Roles, Rules, and Resources for
Physician Assistants
Medical Physiology
Essentials of History Taking and
Physical Diagnosis

Second Quarter

Principles of Obstetrics and
Gynecology
Pathophysiology and Medicine II
Basic Applied Neuroanatomy

Principles of Pediatrics
Principles of Psychiatry
Basic Pharmacology

Third Quarter

Pathophysiology and Medicine
III
Principles and Concepts of
Surgical Intervention in
Disease Processes
Principles of Orthopedics
Introduction to Clinical Rotations
Electrocardiography
Principles of Interviewing

Professional Requirements

Course	Q.H.	Course	Q.H.
Medical Care and Current Social Problems	2	Principles of Medical Rehabilitation	4
Essentials of Physical Diagnosis	5	Electrocardiography	4
Principles of Interviewing	3	Basic Medical Laboratory Science	3
Principles of Psychiatry	3	Basic Pharmacology	3
Pathophysiology and Medicine I, II, & III	9	Medical Therapeutics	3
Principles of Pediatrics	3	Basic Diagnostic Radiology	2
Principles and Concepts of Surgical Intervention		Principles of Obstetrics and Gynecology	3
in Disease Processes	3	Roles, Rules, and Resources for Physician Assistants	2
Issues in Medical Ethics	3	Patient Education and Counseling	2
The Aging Process	3	Applied Study I, II, III, IV, V, VI, VII, VIII	32
Human Anatomy	2		
Medical Physiology	6		
Principles of Orthopedics	3		
Basic Applied Neuroanatomy	4		

Respiratory Therapy

Thomas A. Barnes, Ed.D., *Associate Professor and Director*

Associate Professors

Patrick F. Plunkett, M.S.
Mary E. Watson, Ed.D.

Instructors

Margaret A. Stewart, B.S.
Thomas R. Varricchione, B.A.

Professional Preparation

Aims Respiratory therapy is an allied-health specialty, instrumental in the diagnosis, treatment, management, and preventive care of patients with cardiopulmonary problems. These patients may be found in newborn nurseries, surgical and medical wards, emergency rooms, out-patient departments, and intensive care units of hospitals. They may be suffering from a variety of acute and chronic conditions that are either life threatening or disabling.

Patients suffering a multiplicity of disorders from head injuries may require supportive mechanical ventilation. With the assistance of sophisticated ventilatory and monitoring equipment designed specifically for artificial ventilation, respiratory therapists become an essential part of the critical-care team. Through proper respiratory care and management, many patients who would not have survived are now being returned to an active life. In essence, the respiratory therapist is a life-support specialist.

In the hospital, "Code Blue, Code 99, Dr. Heart, Dr. Pacemaker" are all calls that may signify a life-and-death situation of cardiac and/or pulmonary arrest. The calls alert respiratory therapists to respond as members of an emergency cardiopulmonary arrest team, working alongside physicians and nurses. Respiratory therapists become responsible for life support of the patient through airway management, artificial ven-

tilation, external cardiac massage, and many other sophisticated emergency support measures.

While intensive respiratory care is essential, routine patient care is equally important. Working under physician's orders, respiratory therapists carry out specific therapeutic measures to assist respiratory-distressed patients. Respiratory therapists must be experts in providing and recommending specialized and selective therapeutic respiratory care. They must be competent in such areas as medical gas administration, including oxygen; humidification, aerosols, and intermittent positive pressure breathing (IPPB); bronchopulmonary drainage and exercises, cardiopulmonary resuscitation, mechanical ventilation, airway management, and pulmonary function studies; blood gas analysis; and physiologic monitoring. Because respiratory therapy procedures may alter the patient's physiologic status, astute patient care and observation by trained respiratory therapists are essential.

Respiratory therapists are involved in the treatment of cardiac and pulmonary ailments such as cardiac failure, asthma, pulmonary edema, emphysema, cerebral thrombosis, drowning, hemorrhage, and shock.

Medications are delivered in such forms as aerosols or sprays through mechanical devices. These medications are then transmitted through the airways so that they may act on local areas within the lungs, as well as be diffused into the body's circulatory system.

Respiratory therapists make use of a variety of testing techniques to assist in medical research and diagnosis of disorders. One example is the use of radioactive gases or aerosols which are safely administered to the patient through the respiratory system. Various portions of the lung may be screened and evaluated for obstructions, restrictions, and other abnormalities. Another example is the securing of lung secretions for cancer diagnosis. The most common diagnostic examinations are the measurement of lung volumes and capacities, and flow patterns and pressures.

Today, the field of respiratory technology is expanding even more rapidly to keep pace with the demand for new techniques to cope with environmentally related problems such as smoking and air pollution. New techniques also have been developed for use in the treatment of gangrene, carbon monoxide poisoning, tetanus, and many other disorders.

A View of the Major Students enter the College as majors in the Respiratory Therapy program. Mathematics, chemistry, and the physical, biological, medical, and health sciences offer the bases for professional instruction in Respiratory Therapy. English, psychology, and elective courses in the humanities and social sciences offer a general educational background. Clinical study at the affiliated hospitals provides the opportunity for direct patient care and the immediate application of highly specialized techniques.

Degree The curriculum leads to the Bachelor of Science degree in Respiratory Therapy and includes academic quarters at the University, a structured clinical program, and assigned co-op quarters. Successful completion of the first three years of the program makes students eligible for the first part of the examinations administered by the National Board for Respiratory Care.

Two accelerated programs in Respiratory Therapy and Cardiovascular Perfusion Technology are available for professionals with a baccalaureate or master's degree who are interested in a new career. Students who meet the admissions requirements will have the science back-

ground needed to master professional courses in the curriculum. The curriculum allows students to integrate didactic, laboratory, and clinical practice courses over a twelve- to fifteen-month period of time. Graduates of the Certificate Programs are eligible to take the National Board Examination for Registered Respiratory Therapists or Certified Cardiovascular Perfusionists.

Accreditation

Both the degree and accelerated programs are accredited by the Committee on Allied Health Education and Accreditation sponsored by the American Medical Association.

Sample Freshman-Year Program of Studies in Respiratory Therapy

First Quarter

Freshman Writing
General Chemistry
Basic Animal Biology
Respiratory Therapy Seminar I
Mathematics

Third Quarter

Microbiology
General Chemistry
Respiratory Therapy Seminar III
Elective
Introduction to Literature

Second Quarter

Mathematics
Respiratory Therapy Seminar II
Basic Animal Biology
Physics
Professional Dynamics
in the Health-Care
Delivery System

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
Biology	8	Pharmacology	4
Anatomy and Physiology	10	English Composition and Literature	8
Microbiology	4	Arts and Sciences electives	16
General Chemistry	10	Arts and Sciences electives*	12
Organic Chemistry*	10		
Physics	4		
Mathematics	8		

*Additional requirements for the Bachelor of Science degree in Respiratory Therapy.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Respiratory Therapy Seminars	3	Respiratory Care for the Critical Patient	4
Clinical Seminars	2	Introduction to Pediatric Respiratory Care	2
Advanced Clinical Seminars, I, II, III, IV*	4	Cardiopulmonary Lab Technology	3
Professional Practice Labs I, II, III, IV	4	Cardiopulmonary Lab Practice	1
Cardiopulmonary Physiology	4	Clinical Practice I	6
Advanced Clinical Physiology*	4	Clinical Practice II	6
Pathology	4	Advanced Life Support Systems I*	4
Introduction to Patient Care	4	Advanced Medical Monitoring*	4
Introduction to Respiratory Care	4	Respiratory Care for the Neonatal Patient*	4
Respiratory Care for the Med-Surgical Patient	4	Practicum in Critical Care I, II*	8
Moral Problems in Medicine	4	Directed Study I, II*	4
		Professional Dynamics in the Health-Care Delivery System	4
		Perfusion Technology*	4

*Additional requirements for the Bachelor of Science degree in Respiratory Therapy.

Basic College Compensatory Programs for 1984–1985

The Basic College Compensatory Education Program continues generally to encompass five courses, each bearing four quarter hours of credit, which are to be offered in the sequences indicated below. Certain freshmen may be assigned to any one of these course sequences as applicable on the basis of testing administered during orientation week and pre-collegiate academic credentials.

Fall*

C MTH 1000 Mathematical Preliminaries I
 C ENG 1013 Fundamentals of English I
 E ED 1003 Reading/Study Skills

Winter*

C MTH 1010 Mathematical Preliminaries II
 E ENG 1014 Fundamentals of English II

Specifically, C MTH 1000 and C MTH 1010 are to precede both the C MTH 1106, C MTH 1107, and C MTH 1108 (nonbusiness math) sequence and the C MTH 1113, C MTH 1114, and D MSC 1199 (business math) sequence; C ENG 1013 and C ENG 1014 collectively replace C ENG 1110 (standard Freshman English) and are to precede

C ENG 1111 (standard Freshman English II), the C ENG 1111–C ENG 1113 sequence for Engineers, and, in the case of Lincoln College, the C ENG 1111–C ENG 1113–C ENG 1114 sequence.

**The same sequence is offered Winter/Spring for freshmen who enter in January.*

Schedule for Continuation of Compensatory Programming in the Basic Colleges for 1984–1985

These courses are approved/disapproved for credit, except where noted, by the faculties of the individual colleges and are, therefore, subject to change.

	C ENG 1013* English I	C ENG 1014 English II	C MTH 1000* Math Prelim. I	C MTH 1010* Math Prelim. II	E ED 1003 Read. Study Skills
Arts and Sciences	accepted	accepted	accepted	accepted	accepted
Bouvé Physical Therapy	accepted	accepted	not accepted	not accepted	not accepted
Bouvé Physical Education	accepted	accepted	accepted	accepted	accepted
Bouvé Rec. and Leis. Stud.	accepted	accepted	not accepted	not accepted	not accepted
Bouvé Health Education	accepted	accepted	accepted	accepted	accepted
Bouvé Teacher Prep.	accepted	accepted	accepted	accepted	accepted
Business Administration	accepted	accepted	accepted	accepted	not accepted
Computer Science†	accepted	accepted	not applicable	not applicable	not applicable
Criminal Justice	accepted	accepted	accepted**	accepted**	accepted
Engineering†	not applicable	not applicable	not applicable	not applicable	not applicable
Lincoln College	accepted	accepted	not applicable	not applicable	not accepted
Nursing	accepted	accepted	not accepted	not accepted	not accepted
Pharmacy and Allied Health Professions	accepted*** w/o credit	accepted	not accepted	not accepted	not accepted

**Graded pass-fail and therefore not included in the student's quality-point average.*

***Freshmen in the College of Criminal Justice are not required to take a mathematics course in the freshman year. However, if need for compensatory mathematics is substantiated by a diagnostic examination, students can elect to take C MTH 1000 or C MTH 1010 to prepare themselves for C MTH 1106 Fundamentals of Mathematics as upperclassmen.*

****Although the College of Pharmacy and Allied Health Professions does allow C ENG 1013 to appear on the permanent record, it will only allow C ENG 1014 for credit. Students completing the C ENG 1013–C ENG 1014 sequence will have to make up the four-credit elective that was displaced by C ENG 1013.*

†Although the Colleges of Engineering and Computer Science do not allow C MTH 1000 or C MTH 1010 to be taken for academic credit, they do offer a special course sequence in college calculus with algebra and trigonometry (C MTH 1120 and C MTH 1121) for engineering freshmen judged to have deficiencies in mathematics. The courses involve students in extra hours of work in algebra and trigonometry, but cover the same material as do the regular freshman calculus sequences in the Colleges of Engineering and Computer Science.

University College Alternative Freshman-Year Program

Program Goals

Students in the Alternative Freshman-Year Program are considered regular students and are degree candidates with an undeclared major. The Alternative Freshman-Year Program is specifically designed to help students strengthen their basic academic skills in writing as well as mathematics. While helping them gain confidence in their ability to do college-level work, the program also offers them an opportunity to sample different areas of study before committing themselves to a specific major. Through the combination of a carefully prescribed curriculum and the attention of professional counselors, each student is helped to establish a program suited to his or her individual needs. These same counselors are normally available on a continuing basis throughout the student's entire freshman year.

Developed in collaboration with University College, a division of Northeastern serving students who seek a flexible college program, the Alternative Freshman-Year Program has a proven record of success in assisting students to develop their full potential.

Program Structure

Students in the Alternative Freshman-Year Program begin with 10–14 quarter hours of credit in their first academic quarter. In their second and third quarters, students accelerate their schedules of course work to take, respectively, 14–16 and 16–17 quarter hours of credit. Students in the health sciences track complete the Alternative Freshman-Year Program with a fourth quarter of 17 quarter hours of credit.

After completing the prescribed Alternative Freshman-Year Program, and achieving both a cumulative quality-point average of 1.400 or better and specific program requirements as noted, students may generally continue their degree programs within University College, or transfer, with sophomore status, to the College of Business Administration, the College of Criminal Justice, the College of Pharmacy and Allied Health Professions, the Boston-Bouvé College of Human Development Professions, or the College of Arts and Sciences. In addition to the cumulative quality-point average of 1.400 or better, the College of Business Administration requires a 1.800 average in five key courses, namely, MTH 4113, ENG 4009, ENG 4010, ECN 4601, and MGT 4105. Additional program requirements for students desiring to be admitted to sophomore status in the College of Pharmacy and Allied Health Professions are listed in the Student Handbook for Basic Colleges.

Faculty and Resources

The University has carefully selected for the Alternative Freshman-Year Program faculty members who are aware of individual student goals as well as the needs of students working to adjust to a college program. Faculty and students meet in small classes of not more than twenty-five students.

As members of the program, students are considered regular North-eastern University day students even though they have unique schedules and a distinctively tailored curriculum. Therefore, they generally have access to all counseling services, physical education facilities, dormitory arrangements, and extracurricular programs at the University's main campus in Boston.

Alternative Freshman-Year students are encouraged to make extensive use of the up-to-date programmed learning resources available for self-instruction through Northeastern's Learning Resources Center on the Boston campus. For additional assistance, Alternative Freshmen are also frequently referred to the Academic Assistance Center and/or the Math/Writing Center on the Boston campus. A third and very important resource, the Counseling and Testing Center, is also available to students on both the Boston and Burlington campuses for personal and academic counseling, as well as for vocational testing and counseling.

University College Alternative Freshman-Year Program

Sample One-Year Program: Business Track

Quarter 1			Quarter 2		
No.	Course	Q.H.	No.	Course	Q.H.
MTH 4000	Math I*	4	MTH 4010	Math II*	4
ENG 4009	Fund. of English I*	4	ENG 4010	Fund. of English II*	4
ED 4001	Int. Language		ED 4002	Int. Language	
	Skills Dev. I*	2		Skills Dev. II*	2
	Directed Elective**	2-4	HST 4110	Hist. Civ. A	4
				or Directed Elective**	2-4
Total Quarter Hours		10-14	Total Quarter Hours		14-16
Quarter 3					
No.	Course	Q.H.			
MTH 4113	Math. for Bus.	4			
HST 4111	Hist. of Civ. B	4			
MGT 4105	Mgmt. & Org.	4			
ECN 4601	Economics I				
	or Directed Elective**	4			
Total Quarter Hours		16			

*English, Mathematics and Integrated Language Skills courses will vary depending on placement tests.

**Eligible students choose Directed Electives, in consultation with faculty advisors, from the following list: HST 4110 (Quarter 1), ECN 4601, ENG 1111, COP 4010.

Sample One-Year Program: Criminal Justice, Education, or Arts and Sciences Track

Quarter 1			Quarter 2		
No.	Course	Q.H.	No.	Course	Q.H.
MTH 4000	Math I*	4	SOC 4010	Sociology II	4
ENG 4009	Fund. of English I*	4	ENG 4010	Fund. of English II*	4
ED 4001	Int. Language		ED 4002	Int. Language	
	Skills Dev. I*	2		Skills Dev. II*	2
Directed Elective**		2–4	HST 4110	Hist. Civ. A	4
			or Directed Elective**		2–4
Total Quarter Hours		10–14	Total Quarter Hours		14–16
Quarter 3					
No.	Course	Q.H.			
SOC 4011	Sociology II	4			
HST 4111	Hist. of Civ. B.	4			
POL 4101	Pol. Sci. I	4			
Directed Elective**		4			
Total Quarter Hours		16			

*English, Mathematics and Integrated Language Skills courses will vary depending on placement tests.

**Eligible students choose Directed Electives, in consultation with faculty advisors, from the following list: HST 4110 (Quarter 1), ECN 4601, ENG 1111, COP 4010.

Sample One-Year Program: Health Sciences Track

Quarter 1			Quarter 2		
No.	Course	Q.H.	No.	Course	Q.H.
MTH 4010	Math II*	4	CHM 4110	Pre-Chemistry	5
ENG 4009	Fund. of English I*	4	BIO 4103	Biology A	4
ED 4001	Int. Language		ENG 4010	Fund. of English II*	4
	Skills Dev. I*	2	ED 4002	Int. Language	
				Skills Dev. II*	2
Total Quarter Hours		10	Total Quarter Hours		15
Quarter 1			Quarter 2		
No.	Course	Q.H.	No.	Course	Q.H.
MTH 4106	Fund. of Math	4	MTH 4107	Functions and	
CHM 4111	General Chem. I	5		Basic Calculus	4
	Directed Elective	4	CHM 4112	General Chem. II	5
	Directed Elective	4	BIO 4104	Biology B	4
				Directed Elective	4
Total Quarter Hours		17	Total Quarter Hours		17

*English, Mathematics, and Integrated Language Skills courses will vary depending on placement tests.

Tuition and Fees

Tuition and fees for the Alternative Freshman-Year Program are the same as for students in the Basic Colleges (see page 235 for details). Payment of the standard tuition during the first three academic quarters of residence entitles students to forty-eight credit hours of instruction. Thus, those who take the forty programmed credits are entitled to an eight-quarter-hour tuition adjustment at the regular freshman rate.

Application Procedures

For further information on the Alternative Freshman-Year Program, or to request an application, please write or call:

Dean of Admissions
Department of Admissions
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
Telephone: 617-437-2200

Other Schools and Colleges of the University

Lincoln College

In addition to full-time curricula described earlier in this bulletin, Lincoln College offers interdisciplinary programs providing technological and professional development opportunities to meet special needs of the part-time student. These programs provide educational opportunities for students who must pursue full-time employment but who desire to initiate or continue their academic work.

The part-time evening program includes pretechnology preparatory courses and degree programs leading to the Associate in Engineering (A.E.), the Associate in Science (A.S.), and the Bachelor of Engineering Technology (B.E.T.). The A.E. degree may be earned in Computer Technology and Architectural, Environmental, Structural, Surveying and Highway, Electrical, and Mechanical Engineering Technology. The A.S. degree may be earned in Telecommunications and Energy Systems. Those students seeking further education may earn the B.E.T. degree in Computer Technology and Mechanical, Electrical, Mechanical-Structural, and Civil Engineering Technology.

University College

Part-Time Evening Programs

University College is committed to the education of mature adult students who wish to live effectively in today's complex society. Programs are specifically designed to satisfy their changing professional, cultural, and social needs and interests.

Degree programs have been developed in several major fields of study in business administration, arts and sciences, law enforcement,

and health professions. Flexible curricula are offered on a part-time basis Monday through Saturday during day and evening hours convenient to adult students. Students may select single courses or may enroll in degree programs leading to the Associate in Science or the Bachelor's degree. Classes are scheduled in locations accessible to the urban and suburban communities. Students may attend classes at the Huntington Avenue Campus in Boston or the Suburban Campuses in Burlington and Dedham, Massachusetts, as well as at thirteen other off-campus locations north, south, and west of Boston.

Academic advisers are available by appointment day and evening in the University College Office of Academic and Student Affairs. They offer students assistance in planning a program suitable to their general educational and career objectives and answer questions related to degree requirements, course sequence, and proper scheduling of courses. Appointments may be arranged by calling the University College Office, 617-437-2400, or by coming in person to 102 Churchill Hall. There is no charge for this service. Academic advisers are also available during registration at all registration sites. No appointment is necessary.

University College also offers a variety of career and other support services to its students, including career-development courses and counseling, job-search seminars, counseling and testing services, and placement services.

For a copy of the current University College *Bulletin*, please write or call: University College, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115, telephone 617-437-2400.

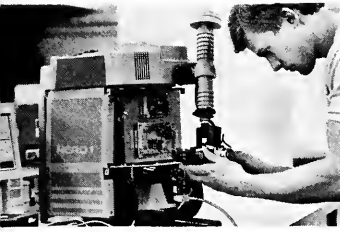
Full-Time Day Programs

In addition to offering a variety of part-time undergraduate programs, University College also offers two full-time day programs in allied health—the Radiologic (X-ray) Technology Program and the Dental Assistant Program. The admission procedures for these programs differ from those of other programs in University College. Therefore, individuals interested in these programs are advised to call or write for further information to the program offices listed below.

Radiologic (X-ray) Technology Program

Professional Preparation

Aims The radiologic technologist is an important member of any health-care team. Combining a technical background with extensive training and skills, the radiologic technologist is trained to use X-rays to produce a clear picture or radiograph of a patient's tissue, bone, or organ structure for evaluation and interpretation by a physician. Northeastern University's Radiologic (X-ray) Technology Program is designed to offer students the opportunity to prepare for entry-level employment opportunities as radiologic technologists.



A View of the Program The Radiologic (X-ray) Technology Program at Northeastern offers a combination of academic preparation and clinical experience. Enrolling a new class of students in September of each year, the program consists of lecture and laboratory sessions held at Northeastern and periods of clinical training at selected radiology departments in Massachusetts hospitals. The program requires twenty-nine months of continuous study. A two-week orientation period is held prior to the beginning of classes each September.

Degree Upon satisfactory completion of the program, students are eligible for an Associate in Science degree and to sit for the National Registry Examination for certification as radiologic technologists.

Certified graduates may, if they wish, seek career opportunities in the diagnostic and therapeutic environments of clinics and hospitals. However, they may also explore opportunities for employment in production, quality control, and facilities inspection at industrial firms. Certified graduates may also decide to consider a program in radiation therapy, nuclear medicine, or ultrasound technology, or may choose to continue their education by applying for acceptance to a bachelor's degree program in health science or hospital management.

Accreditation

This program is accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association and by the American Registry of Radiologic Technologists.

Application

For further information regarding the Radiologic (X-ray) Technology Program, or to request an application for admission, please contact:

Radiologic (X-ray) Technology Program
Northeastern University
244 Forsyth Building
360 Huntington Avenue
Boston, Massachusetts 02115
Telephone: 617-437-2818

Dental Assistant Program

Professional Preparation

Aims New knowledge, techniques, equipment and materials in the health sciences require an ever-increasing number of trained technicians and assistants to support the professional health practitioner. This is especially true in the field of dentistry, as many dentists find they can increase their effectiveness by employing a certified dental assistant to work with them.

Under the supervision of the dentist, dental assistants help provide direct patient care. Such work offers a number of rewards. The dental assistant has an opportunity to participate in a variety of interesting activities in a stimulating work environment and is often responsible for diverse tasks, including development of the interpersonal skills required in relating to patients and in caring for their special needs during office visits.

Employment opportunities for dental assistants are highly varied. Because dentistry is a multiservice profession, the dental assistant may decide to work in general dentistry or in a specialty such as oral surgery,

a field requiring the assistant to work with a surgeon in a manner similar to that of a nurse in a hospital. Other individuals may prefer to work with an orthodontist, whose diagnostic treatment and laboratory procedures are directed toward the prevention and correction of irregularly aligned teeth and related facial structures. Further career opportunities may be available in the fields of pedodontics, i.e., dentistry for children; endodontics, which involves treating the inner structure of teeth; and periodontics, which is concerned with the tissues surrounding and supporting the teeth. General dentistry and dental specialties may be available in private and group practices, public health and hospital dentistry, dental school clinics, Veterans Administration and armed forces hospitals, and federal, state and community clinics. Other opportunities for employment include dental supply companies, insurance companies, and, for individuals with experience and further education, dental assistant education programs.

A View of the Program Northeastern University offers the Dental Assistant Program in collaboration with Tufts University School of Dental Medicine and other local clinical facilities. The program consists of thirty-seven weeks of full-time day instruction including lectures and laboratory sessions offered through University College, one of the ten colleges which together comprise Northeastern University. The clinical segment of the program is based at Tufts University School of Dental Medicine and at other teaching clinical facilities in the Boston area.

Credit The Dental Assistant Program includes the following noncredit professional courses: Dental Anatomy, Biology, Clinical Assisting, Radiology Theory and Practicum, Nutrition, Dental Specialties, Medical Emergency, Dental Laboratory, Microbiology, Histopathology, Pharmacology, Prevention and Plaque Control, Practice Management and an elective course in Word Processing. Additional courses, which do carry college credit, are required in English and Clinical Behavior.

Students who successfully complete the Dental Assistant Program and pass the certification examination may petition to receive up to twenty-four elective credits to be applied toward the Bachelor of Science degree program in Health Science offered by University College. Students who successfully complete the program and pass the certification examination may also petition to receive up to thirty-three credits toward a Bachelor of Science in Education degree in the School and Community Health Education Program offered by the Boston-Bouvé College of Human Development Professions at Northeastern.

Accreditation

The Dental Assistant Program is accredited by the Commission on Dental Accreditation of the American Dental Association. The program is designed to offer students the opportunity to prepare for the certification examination conducted by the Dental Assisting National Board, Inc.

Application

For further information regarding the Dental Assistant Program, or to request an application for admission, please contact:

Dental Assistant Program
Northeastern University
244 Forsyth Building
360 Huntington Avenue
Boston, Massachusetts 02115
Telephone: 617-437-2829

Graduate and Professional Schools

The following graduate and professional schools of the University offer day and evening degree programs.

Arts and Sciences

The Master of Arts degree may be earned in Economics, English, History, Political Science, Psychology, Sociology, and Social Anthropology. The Master of Science degree is available in Biology, Chemistry, Economic Policy and Planning, Mathematics, and Physics. The Master of Science in Health Science, the Master of Public Administration, and the Master of Technical and Professional Writing degrees are also offered. In addition students may earn the Certificate of Advanced Graduate Study in the Program of Advanced Literary Study. The Doctor of Philosophy degree is available in Biology, Chemistry, Economics, Mathematics, Physics, Psychology, and Sociology. Several degree options are offered in the interdisciplinary areas of law, policy, and society; clinical and forensic chemistry; sociology or social anthropology; and education. Most programs may be completed through either full- or part-time study.

Boston-Bouvé College of Human Development Professions

The Master of Science degree may be earned, with specialization in Counseling Psychology, Physical Education, Physical Therapy, Speech-Language Pathology and Audiology, or Recreation and Leisure Studies. Graduate courses in Health Education are available as electives within the College and for special students. Programs may be completed through full- and part-time study.

The Master of Education degree may be earned with specialization in Curriculum and Instruction, Educational Administration, Educational Research, Human Development, Industrial and Career Counseling, Rehabilitation and Special Education, and School and College Student Personnel Counseling. The Certificate of Advanced Graduate Study is offered in Counselor Education, Educational Administration, Language Acquisition and Language Disorders, and Rehabilitation Counseling. The Doctor of Education degree may be earned in Administration and Supervision with specialization in the Practice of Counseling Psychology, Counselor Education, Educational Administration, or Rehabilitation.

Business Administration

A Master of Business Administration degree may be earned. The Graduate School of Business Administration offers a variety of programs to meet the needs and schedules of graduate business students. Two full-time program alternatives are offered: a twenty-one-month Management Intern Program, which includes a six-month, paid professional internship; or a two-year traditional full-time program, which may include administrative or teaching assistantship opportunities. Individuals who wish to continue their full-time job responsibilities while earning an M.B.A. degree may consider the evening part-time program of study, the eighteen-month Executive M.B.A. Program for upper-level managers, or the accelerated part-time High Technology M.B.A. for qualified technical specialists.

The Master of Science degree in professional accounting is an intensive, full-time program specifically designed for liberal arts and other nonaccounting majors.

In addition, there is a nondegree program for advanced study in business administration leading to the Certificate of Advanced Study in Business Administration.

Also within the College of Business Administration, the Center for Management Development offers several intensive, graduate-level programs designed to provide professional growth and to improve the overall performance of experienced managers. Based on a modification of the Northeastern University cooperative education format, these programs permit company-sponsored participants to maintain their job responsibilities during periods of classroom instruction.

The Center's program offerings include: the Management Development Program, The Management Workshops, and the Smaller-Business Management Development Program. (See the Center for Management Development for program details, p. 221.)

Computer Science

The College of Computer Science offers both full- and part-time programs leading to a master of science degree in computer science. Students may specialize in theory, systems software, data bases, artificial intelligence, communications and networks, or interactive systems design.

Criminal Justice

The College of Criminal Justice offers both full- and part-time programs leading to a Master of Science degree in Criminal Justice and, in cooperation with the College of Arts and Sciences, an interdisciplinary Master of Science degree in Forensic Chemistry. Students enrolled in the Master of Science program in Criminal Justice may choose from among several areas of specialization: administration and planning; criminology and research; security administration; and an unspecified concentration developed with a faculty member to suit the individual's needs. The Master of Science program in Forensic Chemistry provides an integrated study of forensic chemistry as utilized in criminalistics laboratories and related professional fields. An interdisciplinary Ph.D. program in Forensic Chemistry is offered through the College of Arts and Sciences in conjunction with the College of Criminal Justice with specialization in Forensic Materials Science or Forensic Analytical Chemistry. A further specialization in Forensic Toxicology is offered through the College of Pharmacy and Allied Health Professions, also in conjunction with the College of Criminal Justice. Students in either program attend classes during late afternoon and evening hours.

Engineering

The Master of Science degree may be earned, with specification in the field of Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, Engineering Management, Information Systems, or Mechanical Engineering. A six-year program in Power Systems Engineering leading to both bachelor's and master's degrees in Electrical Engineering is offered and a special five-year honors program in Mechanical, Industrial, or Electrical Engineering leading to both bachelor's and master's degrees; the Professional Engineer degree in Mechanical, Industrial, or Electrical Engineering; the Doctor of Engineering degree in Chemical Engineering; and the Ph.D. degree in Chemical, Civil, Electrical, Industrial, or Mechanical Engineering. A special interdisciplinary program leading to the Master of Science in Transportation is also offered.

Law

The School of Law offers a full-time program of professional instruction, leading to the degree of Juris Doctor (J.D.). It is fully accredited by the American Bar Association and the Association of American Law Schools. There are no courses for part-time or evening students.

Unique among American law schools, Northeastern's School of Law features cooperative legal education. Under this plan, each student is required to work full time at law for participating employers for four calendar quarters during his or her second and third years, alternating with equal periods of full-time course work. This blending of academic study and practical legal work experience, after a traditional first year of intensive academic study, is designed to offer the best possible preparation for the actual practice of law. Cooperating employers include large and small private firms, government agencies, legal assistance and public defender organizations, judges, unions, corporate law departments and virtually every type of legal practitioner. Employers are located nationwide.

Because the school operates twelve months a year, students complete the program on the same schedule as more traditional schools.

Pharmacy and Allied Health Professions

The Master of Science degree is offered in Biomedical Science, Clinical Chemistry, Hospital Pharmacy, Medical Laboratory Science, Medicinal Chemistry, Pharmacology, and Radiopharmaceutical Science. The Master of Health Professions is also offered. The Ph.D. degree is offered in Biomedical Science with specialization in Medical Laboratory Science, Medicinal Chemistry, Pharmaceutical Science, Pharmacology, and Toxicology. An interdisciplinary doctoral degree is available in Forensic Toxicology. The clinically oriented Doctor of Pharmacy (Pharm.D.) degree is offered as a full-time program to graduates of accredited colleges of pharmacy.

Professional Accounting

The Master of Science degree in Professional Accounting is a full-time highly concentrated 15-month program, designed for arts and sciences and other nonaccounting majors who are interested in careers in professional accounting. The five-quarter course includes a three-month internship with a leading CPA firm in the middle or winter quarter, thus providing both practical experience and financial support.

New classes start in mid-June of every year.

Some of these programs are offered on the cooperative plan; others provide teaching and research fellowships for able candidates.



The Center for Management Development

Sponsored by the College of Business Administration, the Center for Management Development offers programs designed to provide opportunities for professional growth for middle and senior managers. The programs scheduled throughout the academic year, include the Management Development Program, the Management Workshop, and the Smaller-Business Management Development Program. Participants are sponsored by their employers.

The Management Development Program is a graduate-level course in business for managers who have had responsibility for a major task, function, department, division, or independent enterprise. Six weeks of in-residence instruction are extended over a period of several months (October to February, January to May, or March to June). All sessions are scheduled at the Phillips Academy in Andover, Massachusetts.

The Management Workshops offers middle-level managers comprehensive study of the major areas of business through three different programs of graduate-level content. Scheduled at an off-campus facility, The Management Workshop I, The Management Workshop II, and The Management Workshop—High Tech are each held one day per week (Fridays or Mondays) for either ten or twelve consecutive weeks during the September-to-June period.

The Smaller-Business Management Development Program focuses on particular areas of interest to senior executives of the smaller firm. Held at the University's Dedham Campus, the program is scheduled once each year for three in-residence weeks over a three-month period.

The Center also designs and conducts special programs for a wide range of business organizations, either for in-house implementation or at a Northeastern executive education facility. The Center for Management Development can be reached at (617) 437-3272.

The Center for Continuing Education

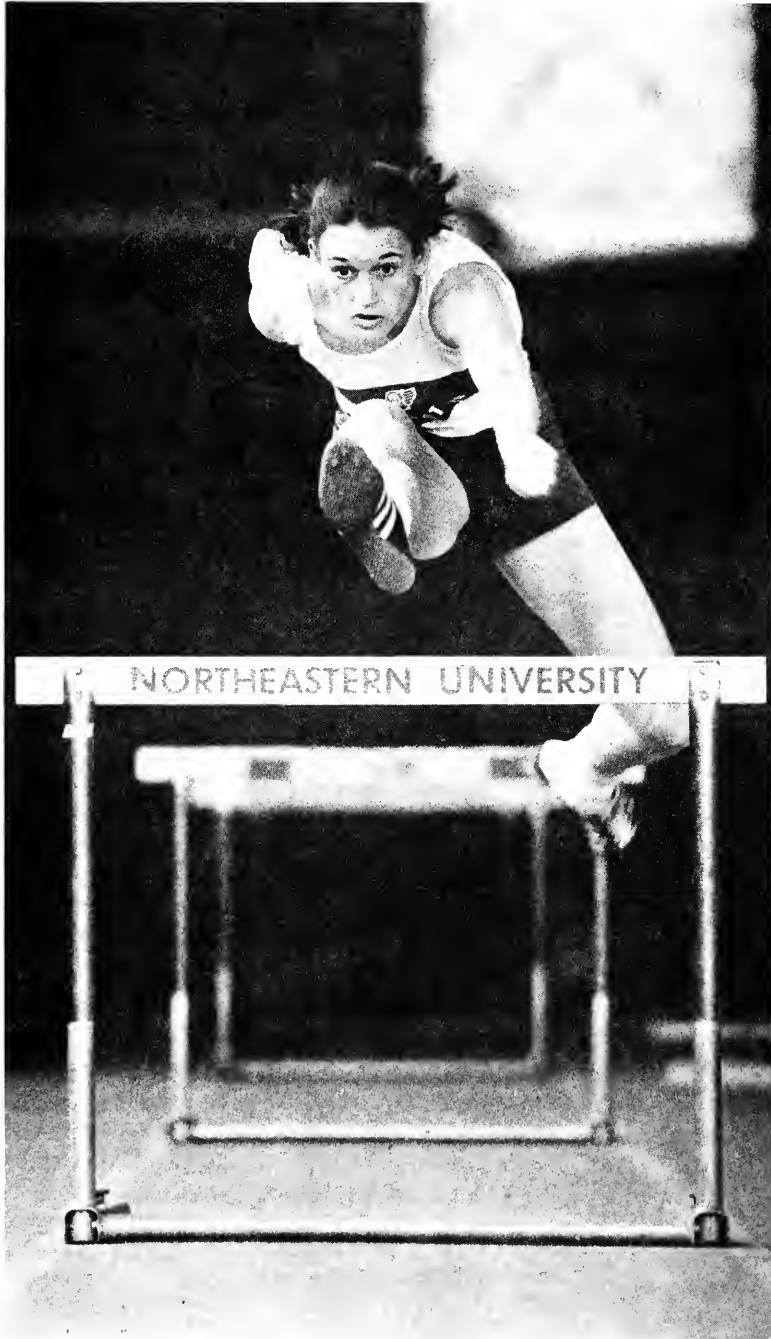
The Center for Continuing Education serves the community in a variety of ways. Programs range from public offerings of enrichment courses to state-of-the-art seminars in engineering concentrations; from short-term, first-line training sessions in supervisory skills to concentrated three-week sessions for corporate executives; from workshops in nursing and other health professions to comprehensive programs in graphic arts management; from special concentration seminars developed for a particular client company to the nationally known Urban Mass Transportation Management Seminars conducted by Northeastern University in conjunction with the United States Department of Transportation. Telephone: 617-329-8000.

Insurance Institute

The Insurance Institute is sponsored by local insurance organizations and companies. It offers a number of noncredit courses in preparation for the Chartered Life Underwriter and Chartered Property-Casualty Underwriter designations, as well as for the General Insurance, Insurance Adjuster, and Risk Management Certificates. Telephone: 617-329-8000.

Part Three

Particulars of Education



Undergraduate Admissions

139 Richards Hall

Tel: 617-437-2200

Philip R. McCabe, M.Ed., *Dean*

Mary A. Zammitti, M.Ed., *Associate Dean and Director*

Assistant Directors

Steven B. Bissell, B.S.

Michael F. Clifford, B.S.

Robert D. Hunter, B.S.

Eleanor W. Lambert, M.B.A.

Cornelius B. O'Leary, B.A.

Viola F. Washington, M.Ed.

Admissions Counselor

George L. Williams, B.S.

To find a college or university that will suit personal needs and interests—a place where you can learn to feel at home and make sound preparation for a future career—is a goal of all students who plan to continue their education beyond secondary school. The goal can be achieved in a number of ways: by talking with enrolled students, faculty, and alumni; by reading catalogs; and by visiting college campuses. In fact, a college campus visit should be high on your list of priorities. Northeastern's Committee on Admissions extends a cordial welcome to all prospective freshman and transfer students and has planned a series of on-campus experiences to make a visit as worthwhile as possible.

The Admissions Conference

It is only natural that students should have many questions about Northeastern—its programs of study, its services to students, and the Cooperative Plan of Education. For this reason, the Committee on Admissions sponsors a series of Orientation Conferences for students. Offered at 10:00 a.m. and 2:00 p.m. on Mondays and Fridays from October 1 through May 1 (except for legal holidays), these conferences have been most successful in helping students become better acquainted with the University. They include comments by an admissions counselor, an informal question-and-answer period, and a multimedia presentation.

Special sessions are also held in the summer between July 1 and September 1. Further information about these summer conferences may be obtained from the Admissions Department.

Guided Tours

Student-guided tours of the campus are usually held daily, Monday through Friday, at 11:00 a.m. and 3:00 p.m. The admissions conference and the tour should both be scheduled in advance by writing or calling the undergraduate Admissions Office (617-437-2211). The opportunity to visit the University's facilities and to observe student life on campus is one important way to learn about Northeastern. Commuting students who wish to visit the University's Suburban Campus in Burlington are encouraged to do so. This will appeal especially to those whose home communities are located north or northwest of Boston.

The Interview

Although it is not required, a personal interview is generally regarded as an appropriate opportunity for students with special questions to meet with an admissions counselor. In studying the secondary school record, the counselor may discover some factor that merits further explanation. In this event, the applicant may be asked to arrange a visit to the Admis-

sions Office. The interview, therefore, may be held at the request of the student or the counselor. In most cases, contacts with Admissions personnel will be more beneficial if the *Northeastern University Bulletin* has been carefully studied before the personal interview.

Special Note

Northeastern does not hold Saturday classes for students in the Basic Colleges; hence, guided tours cannot be provided at that time. A week-day visit to the University is recommended. However, special Saturday appointments may be arranged on a limited basis.

General Requirements for Entrance

An applicant for admission to Northeastern University has, ideally, completed a challenging secondary school program—a program that includes courses in *English, foreign language, mathematics, laboratory science, and history*. Proficiency in a foreign language is especially important for students entering the College of Arts and Sciences. But the overall school record has importance in itself, both as an indication of achievement in subjects critical to university study and as a reflection of a wise choice of electives. Candidates are encouraged to broaden their reading outside of class. The student who can communicate ideas, understand the meaning of words, and write effectively is at a distinct advantage. Most important, the high school transcript should provide clear evidence of sound study habits so vital to success in higher education.

Today's high school students have had the advantage of many innovations that have greatly enriched their experience—independent study, small group seminars, research projects, and off-campus experiences related to community service or future vocations. Northeastern is understandably interested in the growth of the work/study concept in many secondary schools, and the Committee on Admissions looks with favor upon the variety of these worthwhile experiences.

Preparation for Study in Engineering, Computer Science, Science and Mathematics, and Allied Health Professions

It is only natural that evidence of special aptitude and the highest possible level of preparation in the sciences and mathematics should be required for entrance to certain programs of study offered by the University. Such programs include:

College of Arts and Sciences*

Biology, Chemistry, Geology,
Mathematics, Physics,
Applied Physics

Boston-Bouvé College of Human Development Professions*

Physical Education
Physical Therapy
School and Community
Health Education
Speech and Hearing
The Teaching of Secondary
Science/Mathematics

College of Computer Science

Bachelor of Science program

College of Engineering

All programs

Lincoln College

Bachelor of Engineering
Technology degree program

College of Nursing

Bachelor of Science program

College of Pharmacy and Allied Health Professions

All programs

*See page 29 for additional majors offered by these Colleges.

Courses in science and mathematics vary greatly in terminology, teaching methods, and content. Applicants are encouraged, however, to complete the full sequence of such courses if possible. In science, this would usually include a full academic year of study and laboratory work in *biology*, *chemistry*, and *physics*; and, in mathematics, *geometry*, *algebra 1 and 2*, and a fourth year of *trigonometry* and/or *analysis*. Experience has shown that students in programs emphasizing mathematics and science need courses in the social sciences and humanities to be fully prepared for professional courses.

Preparation for Study in Business Administration

Candidates for admission must have successfully completed a strong preparatory program in high school, including courses in *geometry*, *algebra 1*, and *algebra 2*. While mathematics plays an important role in the total program, strong emphasis is also placed on liberal studies to effect an intellectual balance with liberal and appreciative courses.

Preparation for Study in the Social Sciences, Teaching, and Criminal Justice

Many candidates for admission have enjoyed their greatest success in areas other than mathematics-science. Their interests lie, quite naturally, in the study of the humanities and social sciences. Thus, such a student may choose to apply for admission to one of the following programs:

College of Arts and Sciences* In addition to the science programs, the College offers programs in Arts and Humanities with majors in Art, Drama, English, Journalism, Modern Languages, Music Literature, Philosophy, and Speech Communication, and in Social Sciences with majors in African-American Studies, Economics, History, Human Services, Linguistics, Political Science, including a concentration in Public Administration, Psychology, and Sociology/Anthropology.

Boston-Bouvé College of Human Development Professions*

Professional courses leading to the opportunity for *teacher certification* are based upon a strong foundation of liberal arts study in the humanities and social sciences. Elementary Education majors may focus on humanities, reading-language or social sciences. There is also a minor offered in Special Education and a major in Early Childhood Education. Secondary Education majors may choose between English and social studies.

The College also offers majors in Human Services and in Recreation and Leisure Studies with emphases in a variety of areas including Recreation Management, Outdoor Recreation/Environmental Education, and Therapeutic Recreation.

College of Criminal Justice By its very nature, the program in Criminal Justice requires a strong base of liberal arts study before professional courses are introduced. Applicants for admission should therefore demonstrate an ability to succeed in their study of the behavioral, social, and human services.

**See page 29 for additional majors offered by these Colleges.*

Entrance Examinations (Freshmen)

Research clearly indicates that the best single predictor of college academic success is achievement in secondary school. Thus, this factor, together with the recommendations of the school counselor, weighs most heavily in the evaluation process. Although the Scholastic Aptitude Test and three Achievement Tests of the College Board are required, the

Committee on Admissions does recognize that these test results do not measure such qualities as determination, imagination, and leadership.

English composition has to be one of the three required Achievement Tests. Students can choose the other two tests in subjects in which they feel most confident. Students whose native tongue is not English may substitute the Test of English as a Foreign Language (TOEFL) for the English Composition Test. No single schedule of testing is recommended, but applicants are advised not to take subject matter tests unless they are currently studying such subjects.

For full information about College Board Examinations, consult a school guidance counselor or write directly to:

The College Board
P.O. Box 592
Princeton, New Jersey 08540
or
P.O. Box 1025
Berkeley, California 94701

The American College Testing Program may be substituted for the College Board Testing Program. For full information, write to:

American College Testing Program
P.O. Box 168
Iowa City, Iowa 52243

Admissions counselors also will be glad to answer questions about these testing programs.

Advanced Placement

The University grants advanced placement credit to those students with a score of 3 or better in their Advanced Placement Examinations. Students may take the examinations in the following subjects: American history, art (history of art, studio art), biology, chemistry, classics (Virgil, lyric), computer science, English (composition, literature), European history, French (language, literature), German language, mathematics (calculus AB, calculus BC), music, physics (physics B, physics C—mechanics, physics C—electricity and magnetism), and Spanish (language, literature).

Applicants are required to take the Advanced Placement Tests of the College Board in May.

College-Level Examination Program

The University cooperates with the College Board in its CLEP Program. CLEP provides a national program of five General Examinations and forty-seven Subject Examinations to evaluate nontraditional college-level education. Qualified students are encouraged to take the general and/or subject matter examinations of CLEP, so that college credit may be allowed upon entrance. In general, the Committee on Admissions accepts the score range recommendations of the College Board. Northeastern University has been designated a CLEP Testing Center. Inquiries may be addressed to Counseling and Testing Center, Room 302, EII Student Center.

Carl S. Eli Scholars Program

The University is very interested in providing recognition to students for their high academic achievement and, for this reason, has recently intro-

duced the Carl S. Ell Presidential Scholar award, named in honor of the University's second president.

Each year twenty-five students are selected for this academic achievement award. The scholars are awarded full freshman-year tuition scholarships, and those who maintain a 3.0 cumulative average during their years at Northeastern are awarded one-half tuition grants for each subsequent year. In addition to receiving financial assistance, the scholars are invited to join the Ell Scholars Association in their freshman year. The association endeavors to build a community of scholars within the University by providing a forum for intellectual exchange. Students are usually notified of their selection for this award before February 1.

Community Financial-Aid Grant Programs

To supplement student earnings from cooperative education experiences, and the University's regular student financial aid program, the University has established a number of special community grant programs for disadvantaged students. In all cases, students have to be accepted for admission and complete the University's application procedure for financial aid (see p. 233 for complete details) to qualify for one of the special community grant programs. For additional information, write to the Admissions Department.

Applying for Admission and Plans of Admission

Entry Dates

Northeastern University admits qualified freshman students to all programs in September. The University also has a January entrance date for most of its programs. Entrance dates for transfer students vary by program; many admit students at the beginning of each of the four quarters.

The application should be filled out properly, signed, and forwarded to the Dean of Admissions, Northeastern University, Boston, Massachusetts 02115 together with a nonrefundable \$25.00 application fee. Checks should be made payable to Northeastern University. This fee may be waived in cases of extreme hardship as endorsed by the candidate's secondary school counselor or social worker. It is to the students' advantage to submit applications for admission promptly. Students are also responsible for making sure that their transcripts and College Board scores are submitted to the University.

Program Selection

Many students have difficulty in selecting a program of studies. For this reason, the University has introduced flexibility into its programs so that students may explore alternative fields or tailor their programs to personal goals. Freshman candidates have to indicate a choice of college and, in some cases, a major. In the College of Arts and Sciences, Business Administration, Computer Science, Criminal Justice, Engineering, Lincoln College, and Pharmacy and Allied Health Professions, students do not have to make a definite choice of major concentration or emphasis until the end of the freshman year and in some programs until the end of the sophomore year. There is also flexibility in choosing a major in the teacher preparation program offered by Boston-Bouvé College of Human Development Professions. In certain programs, a limited number of electives are available for freshman students.

Rolling Admission Plan

Under Northeastern's Rolling Admission Plan, candidates may be notified of their acceptance at a point in their secondary school careers when there is sufficient evidence that they will be able to profit from study at the university level. This may occur early in the senior year or after the results of College Board Examinations have been evaluated. In all cases of acceptance, candidates are to complete successfully the senior year of high school.

Students should note that enrollments are limited in some programs where the number of applications is expected to exceed campus resources.

Deferred Admissions Plan

Accepted students who wish to participate in the Deferred Admissions Plan will be asked to describe the activities they plan for the year preceding enrollment. Students may choose this plan for a variety of reasons that may include travel, health problems, or work. Information on the plan is available from the Admissions Department.

Early Admission—Juniors, Second-Semester Seniors

In certain cases, students may enroll at Northeastern prior to high school graduation. Such students may enroll at Northeastern either in September or January, thereby reducing the time to complete degree requirements by one year. A special form provided by the Admissions Committee requires the endorsement of the school principal or guidance counselor for early admission. Write to the Department of Admissions for further details.

College of Arts and Sciences

Students accepted for entrance to the College of Arts and Sciences should refer to page 33 for the description of the four tracks students are placed in by the College before beginning their freshman studies.

Alternative Freshman-Year Program

The Alternative Freshman-Year (AFY) Program was developed in collaboration with University College, a division of Northeastern serving students who seek a flexible course schedule. This degree-track program may be ideal for those students who feel that their high school grades do not reflect their true abilities and/or believe that they are not ready to undertake a full college curriculum.

The AFY Program is specifically structured to assist students in making the academic and social adjustments necessary for success in college. Working with a counselor, students follow a prescribed curriculum designed to meet their individual needs and to help them sharpen basic academic skills in writing, mathematics, and the life sciences, while gaining confidence in their ability to do college-level work. In addition, the program also permits students to sample different areas of study before committing themselves to a specific major.

The full range of counseling services, physical education facilities, dormitory arrangements, and extracurricular programs is generally available to students enrolled in this program.

For further information about the Alternative Freshman-Year Program, see page 212.

Programs for Minority Group Students

Northeastern University deliberately seeks to expand educational opportunities for deserving, minority-group students and to recruit promising students from economically and culturally disadvantaged backgrounds. In so doing, it has increased its guidance and other supporting services in order that such students may be assured the opportunity to succeed in their chosen fields of study. Supporting services include tutorial study and programmed instruction. These and other counseling services are provided by the University's African-American Institute.

Project Ujima Program

"Ujima" is Swahili for "collective work and responsibility." The purpose of Northeastern's Project Ujima is to assist disadvantaged minority-group students in developing their potential to the fullest extent.

The program is designed to help make students aware of their potential and to urge them forward with a sense of direction and purpose. Special programs such as minicourses, counseling seminars, tutorials, and training sessions are provided to meet the needs of these students.

Open Campus Courses

Under Northeastern University's Open Campus Plan, qualified high school students who can gain release from their schools are invited to take full-credit courses at Northeastern while they are still enrolled in secondary school. In this way, students are able to gain a better idea of the collegiate environment while they work toward college credit. For further information, write to the Admissions Department.

Cooperative Freshman-Year Program

College of Engineering Summer Quarter Each June, the College of Engineering enrolls a limited number of qualified students in all programs under a special summer Cooperative Freshman-Year Program.

Students may enter Northeastern University in the June following completion of the senior or junior secondary-school year and complete the first quarter of their college freshman year from June to September.

Graduating high school seniors then continue their freshman academic programs or undertake cooperative work assignments. The first cooperative work assignment normally occurs either in the winter quarter (January to March) or in the spring quarter (April to June). Under special circumstances, and at the discretion of the faculty coordinator, freshmen may be placed in September, following completion of their first academic quarter. After this work assignment, the student will return to Northeastern and complete the freshman year. The exact schedule will be based upon the professional judgment of the Cooperative Education Department and the academic progress of the student.

By extending the freshman year, enrollees have the opportunity to defray a portion of their first-year expenses.

Following the summer term, juniors have the option of returning to their secondary schools with credits earned toward college degrees or staying on at Northeastern, with the permission of their secondary schools, as members of the freshman class. Students who choose to remain at Northeastern then have the opportunity to participate in cooperative work assignments similar to those held by graduating seniors, either in the fall or winter quarter. For additional information, write to the Admissions Department.

Orientation and Registration

The orientation and registration program, which begins with your arrival in September, officially launches your academic career at Northeastern.

The administration, faculty, and many upper-division students have planned several days of programs, faculty seminars, meetings, and special events designed to help you adapt to college life in general and Northeastern University in particular.

In addition to participating in regular registration operations, receiving class schedules, and purchasing books, you will meet with the dean and faculty members of your college, who will provide information concerning your planned academic major, courses, and career goals.

You will have the opportunity to attend "how to study" seminars, peer-counseling sessions, and many other informative events. The Department of Cooperative Education, for example, has planned meetings regarding job opportunities and school-work experiences.

You will be introduced to members of more than 150 student organizations, some of which you might choose to join. Guided tours of Boston's historical and cultural centers will also be available.

Freshman students are assigned to classes based on their choices of college and major, high school records, and a variety of placement tests taken during the orientation and registration program.

Skill and Competency Development

Responding to what is apparently a growing national need to improve basic writing, numerical, and reading/study skills among otherwise academically acceptable college freshmen, the University extends to freshman in several of its participating Colleges the opportunity to enhance the likelihood of academic success as freshmen through enrollment in compensatory (i.e., development) courses.

Selection for such course work is based upon the correlation of competency data derived from specifically prepared testing procedures administered during Orientation Week with pre-freshman academic credentials.

The freshman writing sequence, the mathematics sequence, and the reading/study skills course each year bear full credit in participating colleges. (See page 211.)

Instructors, freshman advisers, and the Freshman Affairs Staff of the Dean of Students' Office are ready to assist involved freshmen in achieving success in their endeavors.

Special Students

A limited number of special students may be admitted to the Basic Colleges. Special students are not degree candidates and must meet criteria set by the college to which they are admitted.

Those admitted as special students usually have completed some college-level work. The following are among the applicants who may be considered:

- a college or university graduate who needs additional course work to prepare or qualify for a graduate program;
- individuals, recommended by deans or program directors, who need particular formal course work to meet professional requirements for certification;
- students who need several courses to complete degree requirements at another college or university, provided they have written approval

from the appropriate college dean; others who are recommended by deans of the colleges to take courses leading to regular admission. In such cases, special-student enrollment should be limited to one academic quarter.

All special students will be charged a nonrefundable application fee of \$25. Before obtaining and paying for an application, the potential special student should consult a counselor in the office of the dean of the college offering the course(s) desired. Tuition will be at the quarter-hour rate in effect at the time and must be paid before registration is valid. Special students will be admitted to classes only when there is space available.

All special students must obtain approval from the office of the dean of the Basic College in which they wish to enroll prior to each quarter's registration, but will be required to pay the application fee only once.

International Students

International students are required to complete and file the regular undergraduate application at least six months before registration. They must meet all admission requirements, including the standardized tests administered by the College Board. All academic credentials should be translated into English before being forwarded to the Department of Admissions. After notification of acceptance, students must pay the required deposits and fully complete the University's Declaration and Certification of Finances Form by the date specified on the acceptance certificate before an I-20 Form can be forwarded.

All international students participate in the University's five-year cooperative education program. Only students in the College of Arts and Sciences may petition to complete their degree program in four years.

Northeastern University is authorized under Federal law to enroll non-immigrant alien students.

Students may obtain a copy of the international student admissions booklet, *Many Tongues, One Language*, by writing to the Department of Admissions.

English as a Second Language Proficiency Requirement

Before being considered for admission, students whose native language is not English are required to demonstrate some English language proficiency. This can be done by submitting the results of the College Board's Test of English as a Foreign Language (TOEFL), by successfully completing an approved English language course of study, or by being currently enrolled in such a course.

Before being allowed to enroll in any university classes, all international students, along with any other student whose first language is not English, are required to take the English Proficiency Test administered by the University's English Language Center. This requirement applies to all nonnative speakers regardless of length of time they have been in the United States or their previous study of English.

The results of this test will be used to assign students to their English courses. Students with minimal English language skills will be assigned to the noncredit Intensive English Course. The level of course work required in English will determine the student's academic schedule.

Admission of Transfer Students

Students wishing to transfer into the Basic Colleges of Northeastern University may request advanced standing as upperclassmen on the basis of acceptable credits in an accredited two- or four-year institution or a technical institute.

Basic Requirements

The University's transfer policy is as follows:

1. Only candidates who present satisfactory college records, appropriate to the course of study they wish to pursue, may be considered for advanced-standing credit.
2. Credit is generally given toward a Northeastern degree for any course reasonably equivalent to a course offered by Northeastern and completed with a passing grade at another institution.
3. Candidates must be in good standing and eligible to continue in the institutions they are currently attending.
4. Evidence of honorable dismissal is required.

Application Procedure

If September entrance is planned, complete an application for admission no later than July 1. In certain programs, enrollment is possible at the beginning of each Northeastern quarter of study. Complete information on entrance dates for transfer students with advanced standing is available with the application. All transfer students are required to indicate their choice of major on the application.

Submit a high school transcript. Request that an official transcript from each college attended be sent, including a list of the courses that will be completed prior to the end of the academic year.

NOTE: Transfer students are not required to complete entrance examinations.

Orientation and Registration

All transfer students are required to participate in an orientation and registration program scheduled immediately before the beginning of classes. This one- to five-day program provides transfer students with the opportunity to meet with their faculty advisers and plan their course schedules. They will also meet with members of the Student Affairs Office and the Cooperative Education Department.

Required Deposits from Freshmen and Transfer Students

If the Committee on Admissions makes a favorable decision on a student's application, the student will be asked to submit a nonrefundable tuition deposit of \$100 by May 1. This deposit serves as an indication of intent to enroll and is applied to the first-quarter tuition account. A non-refundable dormitory deposit of \$100 is due at the same time for the student who will reside in University housing. An additional nonrefundable room-assignment deposit of \$400 is also required before definite room arrangements are made.

Students applying for entrance dates other than September should read carefully their certificates of acceptance, which will indicate the required deposit dates.

General and Special Health Requirements

All Students

Prior to registration at Northeastern the Lane Health Center's Pre-entrance Physical Examination Form is sent to each student upon acceptance. It is mandatory that each applicant return this completed form, which includes the medical history. This examination *requires* a tuberculin test within six months of the registration date. A rubella titre test is also *required* for all students. All students are required to have physician-documented proof of having had measles or immunization against measles when they were more than one year of age. Similarly, proof of immunizations against German measles is required unless a satisfactory antibody titre against German measles is demonstrated. This information must be forwarded to the University physician for review. Proper health clearance is considered a condition of admission.

Except in the most extreme instances, neither physical nor emotional problems are considered a bar to admission. In fact, we actively encourage handicapped students to become part of the University community. With pertinent information, we usually can make the adjustments to college life smoother and supply special aids when needed.

Sound health and physical fitness are especially important for students in Boston-Bouvé College of Human Development Professions and the College of Nursing and are required by their nonuniversity affiliations. Candidates for admission to the College of Nursing are required to receive special health clearance prior to enrollment. A repeat health examination by the Lane Health Center is given in the third year for physical therapy and physical education students in the Boston-Bouvé College of Human Development Professions and before the third and fifth years for students in the College of Nursing.

Medical Laboratory Science students in the College of Pharmacy and Allied Health Professions are required to have recent physical examinations before entering clinical applied studies in the third or fourth year.



College Expenses

Students are advised that tuition rates, room-and-board charges, and fees are subject to revision by the Board of Trustees at any time. They should also note that the freshman year consists of three quarters of full-time study. The Cooperative Plan, whereby students may be gainfully employed, does not begin until the sophomore year.

The primary purpose of the Cooperative Plan is to provide invaluable on-the-job training, but it also can help make education possible without the accumulation of a large personal debt. Because of the Plan—and the University's determination to keep basic expenses as low as possible—many deserving students who might not otherwise be able to afford an education have attended Northeastern.

Expenses for the Freshman Year (Three Quarters)

Tuition for the freshman year, for those who enroll in September, is payable in three installments at the beginning of the fall, winter, and spring quarters. For those who enroll in January, payments are due at the beginning of the winter, spring, and summer quarters.

Board-and-room expenses for those living in University-sponsored residence facilities vary slightly according to the dormitory to which a student may be assigned. These costs are computed on the basis of a seven-day-a-week arrangement and are also paid in three installments at the beginning of each quarter.

Total Freshman Expenses

Application Fee	\$ 25.00
Tuition (Engineering, Lincoln College, Business Administration, Computer Science)	6,300.00
Tuition (all other colleges)	5,850.00
Board and Room (if applicable)*	4,185.00†
Student Center Fee	37.50†
Infirmary Fee (if applicable)	75.00†
Health Services Fee	300.00
Laboratory Deposit (if applicable; \$10.00 charge for extra cards)	30.00

The above list excludes personal expenses and expenses for books and supplies.

**This scale is for Speare and Stetson Halls. See Housing section, page 270.*

†Payable in three installments at the beginning of each freshman quarter: September 24, 1984; January 2, 1985; and April 1, 1985. For students who enroll in January, the dates would be January 2, 1985; April 1, 1985; and June 24, 1985.

Special Note

Nonrefundable deposits of \$100 for tuition and \$100 for board and room are payable not later than May 1. An additional nonrefundable deposit of \$400 will be required from those who request housing. These deposits are applied to the first-quarter costs. The board-and-room deposits reserve a space in a University dormitory.

Expenses for Upperclassmen

	Tuition for Arts and Sciences, Boston-Bouvé,* Criminal Justice, Nursing, Pharmacy and Allied Health	Tuition for Engineering, Lincoln College, Computer Science and Business Administration
<i>Division A</i>		
September 24, 1984	\$2,700.00	\$2,950.00
April 1, 1985	2,700.00	2,950.00
<i>Division B</i>		
January 2, 1985	2,700.00	2,950.00
June 24, 1985	2,700.00	2,950.00
<i>Division C**</i>		
September 24, 1984	2,700.00	2,950.00
January 2, 1985	2,700.00	2,950.00
April 1, 1985	2,700.00	2,950.00

*Physical Therapy Program = \$2,775.00

**Division C is the term used to denote the classification of students who are temporarily or permanently on a noncooperative academic year. Certain students in the College of Arts and Sciences may select a noncooperative four-year program. In other colleges, this program is temporary, sometimes required of transfer students to phase into the Cooperative Plan.

Required Fees for All Students

Application Fee

A fee of \$25 is required when the application for admission is filed. This fee is nonrefundable.

Accident and Sickness Insurance

The University provides an excellent hospital insurance and student health program. All students will pay a nonrefundable University Health Service fee of \$300 per year. This fee will cover the group Blue Cross—Blue Shield program and the medical services provided to students by the University Health Service.

Student Center Fee

All students in the Basic Colleges on the Huntington Avenue campus are charged a fee of \$12.50 per quarter for the services available in the Student Center building.

Graduation Fee

The University requires a \$35 graduation fee from all candidates for a degree. This fee must be paid before the end of the fifth week of the last scholastic quarter in the senior year. Candidates in the College of Nursing are also required to pay a charge of about \$10 for their graduation pins.

College of Nursing Uniforms

Students in the baccalaureate degree program of the College of Nursing purchase uniforms in the fall quarter of the sophomore year.

College of Pharmacy and Allied Health Professions Uniforms

Students in Respiratory Therapy purchase uniforms in the spring quarter of the sophomore year.

Students in Dental Hygiene purchase uniforms in the fall quarter of the freshman year.

Students in Radiologic Technology purchase uniforms in the fall quarter of the freshman year.

Students in the Medical Laboratory Science programs purchase laboratory coats in the spring quarter of the freshman year. Co-op assignments to hospitals usually will require uniform purchases in the spring or summer quarter of the sophomore year.

Student Activities Fee

A fee of \$7.00 per quarter for all upperclass students to fund student clubs, activities, etc.

Other Fees

International Student Fee

There is a one-time fee of \$200 charged to new, undergraduate international students, payable upon their acceptance at Northeastern.

Liability Insurance

Freshmen majoring in the Colleges of Nursing (Bachelor Degree Program and Special Program for R.N.s) and Allied Health (Respiratory Therapy), as well as all upperclass students in Nursing, Pharmacy and Allied Health Professions (excluding Health Records), and medical or health-related programs in Boston-Bouvé College of Human Development Professions, are required to carry liability insurance. A fee of \$18 is charged per year.

Payment of Tuition

All payments should be made at the Cashier's Office, 248 Richards Hall, or by mail. Checks should be made payable to Northeastern University. Beginning with the second week of any quarter, students are not eligible to attend classes unless their tuition has been paid, or specific arrangements have been made with the Bursar for a plan of deferred payment.

It is the student's responsibility to ensure that all tuition and dormitory charges and fees are paid when due. If a bill has not been received prior to the start of classes each quarter, it is necessary that the student come in person to the Bursar's Office where a bill will be processed.

Any discrepancies in billing should be immediately brought to the attention of the Bursar's Office. If there is a billing problem, the undisputed portion of the bill should be paid on time to avoid any additional late fees. Failure to receive a bill through the mail or to pay the undisputed portion of the bill are not justification for late payment of amounts actually owed.

Deferred Payment

Deferred payment of tuition entails a fee of \$10, which is levied on all accounts not paid by the end of the second week of classes. To arrange for a deferred payment plan, students must contact the Bursar's Office before the start of the second week of classes.

Late Payment Fee

A fee of \$100 will be assessed for failure to arrange for, and make, payments in accordance with the prescribed regulations.

Laboratory Deposits

Students taking laboratory courses should be prepared to purchase laboratory deposit cards from the Bursar as directed by the department offering the course. These deposits will be charged with deductions for

breakage and destruction of apparatus in the laboratory. A charge of \$10 each is made for extra cards.

Reserve Officers' Training Corps—Uniform Deposit

Freshmen enrolling in ROTC make a deposit of \$35 to cover loss of, or damage to, ROTC uniforms and equipment. Any loss or damage exceeding the deposit will be charged to the student.

General

Students in the College of Nursing may expect to be assessed fees for clinical laboratory experiences. Physical Education majors pay a room-and-board charge for a resident program at the Warren Center in the spring quarter. Recreation and Leisure Studies students pay a fee for a one-week term of camping at the Warren Center. A one-week session in winter sports is optional for Recreation and Leisure Studies majors in their junior or senior year (at a cost of \$175).

Refunds

The University provides all instruction on an academic-quarter basis, for which students pay at the beginning of each quarter. Tuition refunds in all schools and colleges may be granted through the first four weeks of a quarter only when specific conditions are met and on the basis of the date appearing on the official withdrawal application. (Nonattendance does not constitute official withdrawal.) Questions regarding refunds should be discussed with the Dean of Students' Office. When approved, refunds are made as follows:

Tuition Refund

Official Withdrawal Filed Within	Percentage of Tuition Refunded
1st week of Quarter	100
2nd week of Quarter	75
3rd week of Quarter	50
4th week of Quarter	25

Room and Board

(New Freshman and Transfer Students)

Rental charges for rooms in University accommodations are refundable only in cases of withdrawal prior to the start of a quarter (except in special circumstances so adjudged by the University). The \$100 and \$400 deposits are not refundable. Board charges may be refunded for all unused portions when the food identification card is surrendered to the Office of the Dean of Students for Housing.

Overloads

Tuition covers the cost of each student's required courses for a quarter. In addition, a course worth one quarter hour of credit may be taken without added charge. However, any other additional courses will be billed as overloads to the students taking them.

Financial Aid

Charles M. Devlin, M.Ed., *Dean of Student Financial Services*

Financial assistance in the form of loans, grants, and work-study is available on an annual basis to qualified students. Undergraduate financial aid funds are administered in accordance with a nationally established policy and philosophy of financial aid for students pursuing a degree in higher education. It is a basic premise of this policy that parents have an obligation to pay for the education of their children to the extent that they are able to do so. In addition, students are expected to contribute to their educational cost from summer and co-op earnings, outside agency awards, their own assets, and other resources they may have. Financial aid is available only for meeting the difference between the total family contribution (parents' and student's contribution) and the annual educational costs. The parents' contribution is determined by an objective analysis of the family's financial state: net income, number of dependents, allowable expenses, indebtedness, and assets. Criteria established by the College Scholarship Service are used in making the evaluation.

The University does not award any form of financial assistance to students who are not citizens or permanent residents of the United States.

Application Procedure

Initial Year (Freshman and Transfer Students) Applicants seeking financial assistance for their freshman year are required to complete their applications by February 15 for summer or fall entrance and by October 15 for winter or spring entrance. Transfer students must complete their applications by April 15 for summer or fall entrance and by October 15 for winter or spring entrance. (Transfer applicants must also have completed Financial Aid Transcripts from all previously attended post-secondary schools on file by the deadline dates.)

On the FAF you must indicate Northeastern University (code 3667), the Pell Grant Program, and your state scholarship program (if applicable) as recipients of the FAF. The FAF is available from secondary school guidance offices or the Financial Aid Office.

Awards are made on a first-applied, first-aided basis and are contingent on continued funding. The typical award takes the form of a package combining a grant, a loan, and/or part-time employment. Awards may be adjusted at any time upon receipt of other funds or changes in status.

All initial year recipients of financial aid are required to submit a copy of their parents' prior year tax return before their financial aid award is final.

Upperclass (Sophomore-Senior) Upperclass applicants are required to submit a Financial Aid Form to the College Scholarship Service and a Northeastern University "Upperclass Application for Financial Assistance" each year for which they desire assistance. On the FAF, you must indicate Northeastern University (code 3667), the Pell Grant Program, and your state scholarship program (if applicable) as recipients of the FAF. Financial aid awards are made for the entire academic year and must be filed prior to the following deadlines:

In school Fall and Spring Quarters
In school Winter and Summer Quarters

February 15
February 15

Graduate and Law Students All Graduate and Law School applicants must file the Graduate and Professional School Financial Aid Services (GAPSFAS) form, a Northeastern University "Application for Financial Assistance," and a Financial Aid Transcript from each post-secondary school attended. Parents' financial information is required on the GAPSFAS form from *all* applicants. Application deadlines are as follows:

Law students	February 15
All other graduate students	April 15

Eligibility and Selection

In order to be eligible to participate in the financial aid program at Northeastern University, all students must a) apply for financial aid, completing the proper application forms and submitting them in a timely fashion; b) ascertain financial need; c) be in attendance at Northeastern University, pursuing a first academic degree on at least a half-time basis in an eligible program; d) be making normal academic progress as determined by the college in which the student is enrolled; e) meet any other eligibility requirements of the individual aid programs.

Due to limited funding, Northeastern University is not always able to meet the full financial need of all applicants. Priorities in awarding aid will be based on highest financial need, meeting application deadlines, and potential for academic achievement. All financial aid is contingent on the availability of funds.

Most students who attend Northeastern University move along with their class. On request, information about retention and attrition can be obtained from the Office of the Dean of Students.

Mail Inquiries to:

Northeastern University
Office of Financial Aid
P.O. Box 75
Boston, Massachusetts 02117

Office Hours

8:30 a.m. to 4:30 p.m., Monday–Friday

Telephone Numbers

General Information (Financial Aid)	617-437-3190
Pell Grant Information	617-437-3804
Help/GSL/Parent Loans	617-437-3386
Initial-year Information	617-437-3907
Student Employment Center	617-437-3200

State Scholarship Programs

The Office of Financial Aid strongly advises applicants for aid to apply to state scholarship programs at the same time that they apply for aid from the University.

The Commonwealth of Massachusetts provides scholarship aid to Massachusetts students pursuing full-time programs of study in an accredited college or university. Awards are made in the summer of each year, and applications for entering freshmen are available through their high school guidance offices. Out-of-state students should investigate aid programs in their respective states. Substantial state aid is offered by Connecticut, New Jersey, Pennsylvania, Rhode Island, Vermont, and Maine. Application is by the Financial Aid Form (FAF).

Federal Programs

Note: All Federal financial aid programs are subject to change, depending upon adequate and continuing Federal support.

Pell Grant

This is a program of direct federal grants to undergraduate students only. Eligible students can receive as much as \$1,900 per year toward the cost of their education. Pell Grants are generally available to all students who have not previously received a bachelor's degree, who are not in this country on a student visa, and who are attending college on at least a half-time basis (minimum 6 quarter hours). To utilize this program to the fullest, all students applying for financial aid *must* file for a Pell Grant.

Applications for a Pell Grant can be made on the Financial Aid Form (FAF), which is available from local high schools, or by calling the Pell Grant unit of the Financial Aid Office at 617-437-3804.

College Work-Study Program

This is a need-based program of part-time employment under the sponsorship of the federal government. It is designed to help full-time students meet their educational expenses. Students generally work part time while attending classes. Eligible students may work for the University or for public or private nonprofit off-campus agencies. The Office of Financial Aid has the responsibility of placing qualified students in their job assignments.

Supplementary Educational Opportunity Grant

Supplementary Grants are direct awards provided by the federal government. They are available to a limited number of full-time undergraduate students who present evidence of needing financial assistance. Eligible students who are accepted for entrance may receive Supplementary Educational Opportunity Grants ranging from \$200 to \$2,000 for each year of their undergraduate education.

Health Professions Loan

This program is available to full-time undergraduate students who have been accepted for a course of study leading to a Bachelor of Science degree in Pharmacy. A student who evidences financial need and academic promise may borrow as much as \$2,500 per academic year. Repayment of principal and interest does not begin until one year after the student ceases to pursue a full-time course of study. Repayment of principal may be extended over a ten-year period with interest at the rate of 9 percent per annum.

Guaranteed Student Loan Program

Under this program, students who are enrolled for at least one-half the normal academic work load may borrow from a participating bank or other financial institution. Terms and conditions vary from state to state, but the law allows dependent undergraduates to borrow a maximum of \$2,500 per year, up to a total of \$12,500, for undergraduate study. The federal government pays the interest while the student is in school. The student must begin repaying the principal of the loan plus interest shortly after the student drops below half-time enrollment.

Applications for the loan itself are available from local banks or the Education Office of your state government. Additional information and necessary application forms for first-time borrowers are available from the Financial Aid Office.

Parent Loans for Undergraduate Students

Under the Parent Loan Program (PLUS), parents of dependent undergraduate students may borrow up to \$3,000 per year for each child enrolled in an approved educational institution. These loans are also offered by banks and other financial institutions, although terms and availability vary from state to state. Unlike the Guaranteed Student Loans, the PLUS loans require parents to begin repayment of the loan (with 12 percent interest) within 60 days of receiving the loan. Repayment may be stretched out over ten years, as long as the minimum monthly

payment of \$30 is maintained. Applications and more information can be obtained from local lending institutions.

National Direct Student Loan

Direct Loans are available to students who present evidence of needing financial assistance. Undergraduate students may borrow up to a maximum of \$3,000 for the first two years, or a total of \$6,000 for their entire undergraduate education. Students are allowed a total maximum of \$12,000 through their undergraduate and graduate education. Repayment and interest on Direct Loans are not required until 6 months after a student graduates or withdraws from the institution. Repayment of principal may be extended over a ten-year period, with the interest rate at 5 percent per annum. Repayment may be deferred up to three years if the student is pursuing at least a half-time course of study or serving in the Peace Corps, VISTA, or the armed forces.

Nursing Student Loan

This program is designed for full-time undergraduate students who have been accepted for a course of study leading to an Associate or Bachelor of Science degree in Nursing. Provided financial need is evident, students may borrow as much as \$2,500 each year up to a maximum amount of \$10,000 for their entire undergraduate education. Repayment and interest on these loans do not begin until nine months after the student ceases to pursue a full-time course of study. The repayment of the principal may be extended over a ten-year period with the interest at the rate of 6 percent per annum.

Reserve Officers' Training Corps Scholarship Program

(Refer to section on Reserve Officers' Training Corps.)

University Scholarships

The following scholarships are awarded through the Office of Financial Aid. Because we award specific scholarships to the students who qualify, you should not apply for any specific scholarship. If you feel you are a potential recipient for any of these listed awards, you may bring that fact to our attention.

The Vivian B. Allen Scholarships

Nursing

The Vivian B. Allen Foundation Endowment for nursing scholarships was established in 1968 through the generosity of the Vivian B. Allen Foundation, Inc. The income from a \$500,000 endowment fund is to be used to provide scholarship assistance for students entering or enrolled in the College of Nursing of Northeastern University. The application procedures and qualifications for selection are the same as those for all other scholarships.

Alumni Scholarships

All Colleges

Scholarship aid is available to entering freshmen who are relatives of alumni. Applications must show evidence of scholastic achievement and financial need.

Class of 1967 Alumni Scholarship

Day College Students

The Northeastern University Class of 1967 Alumni Scholarship was established in 1967 and endowed in 1982 by the Class of 1967. Income from the fund is to be awarded each year based on financial need, campus activities, and scholastic achievement. Priority will be given to children, other relatives, and friends of the Class of 1967.

Irving Aronson Scholarship

Engineering

The Irving Aronson Scholarship for Electrical Engineering students was established through the generosity of the family of Irving Aronson as a living memorial

to a man who shared his life with many people and who cared so much for the educational process. Income from this fund will be awarded or loaned to electrical engineering students who demonstrate financial need and academic responsibility.

George L. Barnes Scholarship

All Colleges

This fund was established in 1969 by Miriam P. Poole, daughter of George L. Barnes, in memory of her father, a distinguished member of the Northeastern University Corporation and Board of Trustees from 1937 until his death in 1965.

The income from this fund will annually provide a full scholarship to a deserving student from Weymouth, Massachusetts. The award is made on the basis of need and character. Some additional assistance may be given in the upperclass years.

The Barry Scholarship

Engineering

The Barry Scholarship, established in 1973 by the Barry Division of Barry Wright Corporation, is available to students in the College of Engineering. Preference will be given to mechanical engineering majors and sons and daughters of Barry employees, based upon demonstrable financial need and academic achievement.

**The Mr. and Mrs. Emil
Matthew Bauer Fund**

All Colleges

The interest from the Fund, established in 1954, is used for scholarships or other financial assistance to students of German birth or of German extraction studying at Northeastern University. The scholarships are available to either men or women students enrolled in any year at the University.

**The Alvah K. Borman
Memorial Scholarship**

Gamma Phi Kappa
Fraternity Undergraduates

This scholarship was established in 1976 through the generous contributions of Gamma Phi Kappa Fraternity alumni. In 1979, the Gamma Phi Kappa Fraternity Alumni Association, Incorporated, voted to name the scholarship in memory of Alvah K. Borman, Northeastern University's Dean of Graduate Placement. Dean Borman was an active member of the GPK fraternity for over forty-six years, serving as an undergraduate brother (class of 1936), faculty advisor from 1953 to 1965, an active alumnus until his untimely death in 1979.

Awards from this fund are made annually to undergraduate members of the Gamma Phi Kappa Fraternity who have demonstrated good academic standing. Recipients of this award must have been members in good standing of the Gamma Phi Kappa Fraternity for at least six months prior to the time of award.

**Boston Housing
Authority Scholarships**

All Colleges

As an expression of Northeastern's commitment to the city of Boston, the University has established 100 full-time undergraduate scholarships for residents of housing developments run by the Boston Housing Authority (BHA). Applicants for the scholarships, which will be offered for the first time in September 1984, must meet the requirements for admission to Northeastern and be residents of BHA housing.

Martin Brown Scholarship Fund

Engineering

This scholarship was established in 1961 by Mr. Martin Brown, an engineering alumnus of the Class of 1921. Its purpose is to assist qualified students enrolled in the College of Engineering who have need and have demonstrated above-average scholastic ability.

Wellington Burnham Fund

All Colleges

This fund provides financial assistance to worthy students of limited means without discrimination as to race, creed, color, or scholastic attainment. It was established in 1961 under the provisions of the will of George A. Burnham.

**The Godfrey L. Cabot
Scholarship Fund**

All Colleges

This fund was established by Dr. Cabot in 1954 to help meet the college expenses of employees or children of employees of Godfrey L. Cabot, Inc., and its subsidiary and associated companies. To be eligible, the employee must have completed at least five years of service with the company prior to the time the student enters the University. The University shall determine the number and amount of these scholarships, which are not limited to outstanding students and which are available to evening as well as day students. Students interested in applying for scholarship aid from this fund should communicate with the Cabot Personnel Office or the Office of Financial Aid at Northeastern University.

Cameron and Colby

Ellis H. Carson Scholarship Fund

Business Administration

This fund was established in 1983 by Cameron and Colby Company, Inc., in honor of Mr. Carson, former president of its Treaty Reinsurance Activity, known as NERCO. The income from this fund is used to assist a freshman student in the College of Business Administration who demonstrates not only financial need but also academic promise deemed consistent with the high standards of foresight and acumen that characterized the career of Ellis H. Carson.

**Camp Dresser & McKee, Inc.
Scholarship**

All Colleges

This Scholarship was established in 1973 by Camp Dresser & McKee, Inc., and is available to students in all colleges. Preference for awards will be based upon demonstrable financial need and academic achievement.

**Louis S. Cashman Memorial
Scholarship Fund**

Business Administration

This fund was established by the Massachusetts Credit Union Association (CUNA) and friends of Mr. Cashman in recognition of his outstanding service to the credit union movement in the Commonwealth of Massachusetts.

This scholarship is awarded annually to students in the College of Business Administration who have need, with particular preference given to those enrolled in Banking and Finance.

The Gardner A. Caverly Scholarship

All Colleges

This scholarship was established in 1957 through the generosity of Mr. Gardner A. Caverly, an alumnus of the College of Business Administration and a member of the Class of 1934. Its purpose is to provide financial assistance and encourage qualified students from the New England area to attend Northeastern University. In selecting worthy students for these scholarship awards, preference is given to graduates of the Rutland, Vermont, and Laconia, New Hampshire, high schools.

**Carl W. Christiansen
Scholarship**

Business Administration

The Carl W. Christiansen Scholarship Fund was established in 1976 by Mr. Carl W. Christiansen, a graduate of the School of Commerce and Finance, Providence Division of Northeastern University, Class of 1923. Early in his career, Mr. Christiansen was an accounting instructor and associate dean in the Providence Division. In 1927, the accounting firm of Christiansen, Murphy and Company was founded, which in 1940 became known as Christiansen and Company—Certified Public Accountants. The income from this fund is to be awarded annually to an

entering freshman in the day College of Business Administration who has demonstrated the necessity for financial aid. Preference will be given to students from the state of Rhode Island who are interested in pursuing a career in accounting.

Ruby H. Cole Scholarship Fund

All Colleges

The Ruby H. Cole Scholarship Fund was established in 1973 under the will of Mrs. Cole, late of Boston, Massachusetts. The income from the fund is awarded annually to one or more female students enrolled in or admitted to undergraduate programs of the Basic College of the University and who are graduates of Roxbury High School, Roxbury, Massachusetts. Recipients must demonstrate financial need, academic stability, and soundness of character.

**Commercial Union Insurance
Companies Scholarship**

Criminal Justice

The income from this fund, established in 1982 by the Commercial Union Insurance Companies, will be used to provide a scholarship to an entering freshman who demonstrates need and shows promise of success in the law enforcement field.

Community Scholarships

All Colleges

The Community Scholarships were established by President Asa S. Knowles during the period 1963–1973. These scholarships stipulate that Northeastern will ensure that full freshman tuition be met in the form of scholarships and grants for qualified students.

In order to qualify for consideration, a student must apply for financial assistance through the normal application procedure and demonstrate need.

The following Massachusetts communities are designated under this scholarship: Boston, Ashland, Burlington, Brookline, Belmont, Brockton, Framingham, Marshfield, Milford, Norwood, Reading, Revere, Sandwich, Westwood, Weston, and Weymouth.

**The Compugraphic Corporation
Scholarship Fund**

All Colleges

The Compugraphic Corporation Scholarship Fund has been established and endowed at the University with a generous gift from an individual. The income from the scholarship fund is to be used annually as financial assistance for persons who are admitted to or enrolled in full-time undergraduate programs of the Basic Colleges of the University and who demonstrate financial need, academic stability, and soundness of character. Scholarships are tuition grants and are awarded to persons who are otherwise eligible and who are, at the time of the grant, children of current employees of Compugraphic Corporation.

**Arnold L. Cormier
Memorial Scholarship**

Criminal Justice

The Arnold L. Cormier Memorial Scholarship Fund was established in 1980 by Joseph L. and Ruth E. Cormier in memory of their son, Arnold, a student in the College of Criminal Justice, Class of 1981. Arnold was a good student with excellent grades and was an active participant in classroom discussions and college activities.

His untimely death in an automobile accident, while on a weekend trip with two of his classmates, was a tragic loss to his parents and friends. To perpetuate the memory of Arnold Cormier and the spirit of good fellowship for which he stood, this scholarship is awarded annually to a senior in the College of Criminal Justice.

**The Salvatore J. and
Corinne Danca Scholarship**

All Colleges

The Salvatore J. and Corinne Danca Scholarship, established in 1974 by Salvatore J. Danca, a graduate of Northeastern University, Class of 1934, is to be

awarded annually to a student enrolled as a sophomore. Selection will be made by the Committee on Scholarships, using academic excellence and financial need as the criteria for selection.

**Elizabeth A. Davey Scholarship
for Physical Therapy**

Boston-Bouvé College of
Human Development Professions

The Elizabeth A. Davey Scholarship for Physical Therapy students was established through the generosity of the family and friends at Choate Memorial Hospital on behalf of Elizabeth A. Davey, as a living memorial to a woman who shared her life with so many people. Income from this fund will be awarded or loaned to a Physical Therapy senior who demonstrates superior academic achievement and financial need.

Charles M. Devlin Scholarship

All Colleges

This fund was established in 1976 by the members of the Class of 1970 "in honor of our dedicated adviser," Charles M. Devlin. The income from the fund will be awarded annually to upperclassmen with proven ability and demonstrable financial need. Preference will be given to children of members of the Class of 1970.

The William O. DiPietro Scholarship

Engineering

This scholarship was established in 1967 through the generosity of Mr. William O. DiPietro, a distinguished alumnus of the College of Engineering and a member of the Class of 1942. The scholarship is awarded to one or more deserving freshmen who demonstrate a high caliber of achievement and a desire to fulfill the limits of their ability in both academic and cooperative periods of study. In considering recipients for this scholarship, preference is given to freshmen enrolled in the College of Engineering who have a desire to major in Chemical Engineering. It is intended that those students receiving awards from this scholarship might someday contribute to this or other scholarships themselves, thereby perpetuating growing funds that will help other deserving individuals.

**The Diamond Anniversary
Development Program Scholarship**

All Colleges

This scholarship has been established to commemorate the successful conclusion of the Diamond Anniversary Development Program. This scholarship fund recognizes the loyalty and generosity of the thousands of alumni and friends, corporations, foundations, and organizations whose significant contributions of time and resources have brought Northeastern University to "that greatness which is its destiny."

Three \$1,000 scholarships are awarded annually, as follows: to one or more full-time students enrolled in a cooperative education program within a basic college of the University, to one or more part-time students enrolled in a basic college of the University, and to one or more full-time students enrolled in the graduate division or a professional school of the University. Consideration will be based upon financial need, academic stability, and soundness of character.

**The Harry Doehla Memorial
Scholarship**

All Colleges

The Harry Doehla Memorial Scholarship was established in 1974 in memory of Mr. Harry Doehla, founder and president of Doehla Greeting Cards, Inc. During his lifetime Mr. Doehla provided much financial assistance to young people of limited means to help them in furthering their educational goals.

The awards from this fund are available to undergraduate day students, with preference being given to graduates of Fitchburg High School, Fitchburg, Massachusetts, and Nashua High School, Nashua, New Hampshire. Additional consideration will be given to children of employees of Doehla Greeting Cards, Inc.

**The Cpl. James B. Downey
USMC Scholarship Fund**

All Colleges

This scholarship was established in 1970 through the generosity of Mr. William J. Downey, a graduate of the College of Liberal Arts, Class of 1952, in memory of his brother, Cpl. James B. Downey, USMC. The scholarship is to be awarded annually to an upperclassman in the day colleges who has demonstrated the necessity for financial aid.

Agnes F. Driscoll Scholarship Fund

All Colleges

This fund will provide scholarship assistance to students in their upperclass years who have demonstrated financial need and scholastic attainment.

John Elfers Memorial Scholarship

All Colleges

This scholarship was established in 1983 by William and Ann Rice Elfers in memory of Mr. Elfers' brother. The income from the fund is awarded annually to undergraduate students who demonstrate financial need, academic promise, and soundness of character.

**Carl Stephens Ell Alumni
Scholarships**

All Colleges

To honor Dr. Carl Stephens Ell, the second president of Northeastern University, the Alumni Association established these scholarships in 1958. Either freshmen or upperclassmen enrolled at the University are eligible. Awards will be made to worthy students on the basis of scholastic ability and need. The scholarships are to be distributed as equitably as possible among students in the Basic Colleges and University College. Preference shall be given to sons and daughters of Northeastern Alumni.

**Elmer H. and Daisy M. Everett
Memorial Scholarship**

All Colleges

This scholarship was established through a bequest of Elmer H. and Daisy M. Everett, both alumni of Northeastern University. Mr. Everett graduated from the College of Engineering, and Mrs. Everett graduated from the School of Business. They are both members of the Class of 1934. Mr. and Mrs. Everett had a strong commitment to help young people wanting to further their education. The fund will be administered by the Office of Financial Aid.

Michael T. Federico Memorial Fund

All Colleges

The Michael T. Federico Memorial Fund was established in 1982 by the Rhode Island Alumni Club, fellow alumni, and friends of Michael T. Federico, a graduate of the class of 1940 and a life-long resident of the State of Rhode Island. Income from the fund is to be awarded annually to one or more students from Rhode Island who are in their sophomore year, have attained a Q.P.A. of 3.0 or better, and demonstrated financial need.

**The George Raymond Fennell
Memorial Scholarships**

Business Administration

Two full-tuition scholarships are awarded each year to first-year students enrolled in the College of Business Administration. The scholarships are awarded in memory of George Raymond Fennell, formerly Assistant Director of Admissions and Director of the Northeastern Student Union.

**Clara and Joseph F. Ford
Scholarship Fund**

All Colleges

A fund established by Clara and Joseph F. Ford to provide tuition scholarships for worthy, needy, and well-qualified students who have demonstrated a democratic and tolerant spirit and who are well disposed toward people of all creeds and races.

**The Gamma Phi Kappa
Fraternity Scholarship**

All Colleges

The Gamma Phi Kappa Fraternity Scholarship was established in 1972 by the Gamma Phi Kappa Fraternity Alumni Association, Incorporated, and was endowed in 1976 through the generous contributions of Gamma Phi Kappa Fraternity alumni and undergraduates. Awards are made annually from interest on the endowment to undergraduate students enrolled in the basic day colleges of Northeastern University who demonstrate good academic standing and financial need. Undergraduate members of the Gamma Phi Kappa Fraternity are ineligible to apply for this award.

**The Nathan Gerber
Memorial Scholarship**

All Colleges

The Nathan Gerber Memorial Scholarship was established in 1974 by Albert Gerber, E'52, and Robert Gerber, E'60, in memory of their father, Nathan, a member of the Class of 1925. The scholarship is to be awarded annually to a student or students enrolled in the freshman class with a demonstrable financial need. Selection is made by the Committee on Scholarships.

The Foster Grant Scholarship

All Colleges

This scholarship, established in 1974 by the Foster Grant Co., Inc., of Leominster, Massachusetts, is available to students in any of the full-time undergraduate colleges. Preference will be given to children of employees of Foster Grant Co., Inc. Basis for the award will be demonstrable financial need and above-average academic achievement.

**Clifton W. Gregg Memorial
Scholarship**

All Colleges

This scholarship was established through a bequest of Clifton W. Gregg, a 1915 graduate of the School of Commerce and Finance of Northeastern University. It was Mr. Gregg's request that "the income for this fund be used for the assistance of financially needy students." The award may be made annually. Recipients will be determined by the Committee on Scholarships.

Rabbi Myer O. Grunberg Scholarship

All Colleges

Established in 1953 by Mrs. Myer O. and Miss Rose Grunberg, this annual award is available to a senior student in any college of the University. The award is made to students who have evidenced in personal business, and student relations those characteristics of leadership and human relations that make for a better social order. There is no restriction as to race, creed, color, or sex.

Priscilla E. Hargreaves Scholarship

Electrical Engineering

The Priscilla E. Hargreaves Scholarship for Electrical Engineering Students was established by husband William Hargreaves, E'28, as a loving tribute to a wife whose love and devotion meant so much to him. Income from this fund will be awarded to electrical engineering students who have reached their second year and who show a need and have demonstrated reasonable academic responsibility.

Charles W. Havice Scholarship

All Colleges

This scholarship was established by the members of the Student Union upon the retirement of the former Dean of Chapel, Charles W. Havice. The income from the fund is awarded annually to upperclass students who are active in the Student Union. Students should demonstrate a financial need.

Charles Hayden Memorial Scholarships

All Colleges

The Charles Hayden Foundation, created by the will of the late Charles Hayden, an alumnus of the Boston English High School, offers annual memorial scholarships to freshmen at Northeastern University. The scholarships are awarded to "deserving boys" whose parents are unable to finance the entire cost of their education.

Kathryn S. Horbal Scholarship

Chemical Engineering

The Kathryn S. Horbal Scholarship for female chemical engineering students was established by Kathryn's family as a loving tribute to a daughter whose short lifetime meant so much to so many. Income from this fund will be awarded to female chemical engineering students who have reached at least their middler year and who have demonstrated academic responsibility.

Richard Melvin Horwitz Memorial Award for Excellence in Electrical Engineering

Engineering

The Richard Melvin Horwitz Memorial Award for Excellence in Electrical Engineering was established in 1967 by Leonard J. Horwitz in memory of his brother, Richard Melvin Horwitz, a member of the Class of 1945 in the College of Engineering who died in action during World War II. The award recognizes academic achievement and excellence and is presented annually to an outstanding undergraduate senior majoring in Electrical Engineering.

The Walter F. Howe Memorial Scholarship

Business Administration

This fund was established in memory of Walter F. Howe, Class of 1968, who, within one week after graduation, was fatally wounded while pursuing thieves who had stolen his landlord's car. The scholarship was established through the generosity of Walter's friends and relatives in memory of his ideals of good citizenship and civic responsibility. It is awarded annually to a student in the College of Business Administration who demonstrates not only financial need but good citizenship and civic responsibility. The scholarship is open-ended so that additional sums can be added to it in future years and will be awarded by the University without restrictions as to race, color, geographic origin, or scholastic attainment.

The Edward L. Hurtig Scholarship

All Colleges

This scholarship was established in 1968 through the generosity of the Hurtig family in memory of Edward L. Hurtig, an alumnus of the College of Engineering, Class of 1946. The scholarship is awarded annually to an entering freshman in the day colleges who has demonstrated the necessity for financial aid. Preferences will be given to recipients of the Supplemental Educational Opportunity Grants Scholarship Program of the United States Office of Education.

The Maurice A. and Nellie L. Idelson Award

All Colleges

This award, established in 1968, is given annually to an entering freshman in the day colleges who has demonstrated the need for financial aid. Preference will be

given to graduates of the Boston English High School. Should there be no qualified candidate from this source, the award will then be given to any worthy student.

**The Jamaican Associates, Inc.,
Scholarship**
All Colleges

The Jamaican Associates, Inc., Scholarship, established in 1981 by the Jamaican Associates, Inc., is awarded annually to a student who is a citizen of Jamaica and who intends to return to Jamaica upon graduation or to a student who is of Jamaican descent. Preference will be given to a second-year student with demonstrable financial need and proven academic performance.

**Joseph Anthony Johnson
Scholarships**
Engineering

Established in 1968 by the will of the late Joseph Anthony (Johansen) Johnson of the Class of 1928, the income provides scholarship aid for students enrolled in the Department of Mechanical Engineering, with preference given to students of Scandinavian origin.

Ralph P. Johnson Scholarship Fund
Electrical Engineering and
Computer Science

Administered by the Office of Financial Aid and awarded to a Computer Science or Electrical Engineering major, this fund was established in 1980 by David R. Johnson, an alumnus of the Class of 1970, in honor of his father. It is the donor's desire that recipients of this fund assume the moral obligation to reimburse the fund in future years as they may be able in order to make additional financial aid available for other students.

**Dr. LeRoy C. Keagle Memorial
Scholarship Fund**
Pharmacy

The Dr. LeRoy C. Keagle Memorial Scholarship Fund was established in 1975 through the generosity of family and friends of Dr. LeRoy C. Keagle, a man of high integrity and commitment to the profession of pharmacy who, at the time of his death on December 15, 1974, was Dean of the College of Pharmacy and Allied Health Professions at Northeastern University. The income from this scholarship fund is awarded annually to a student in the undergraduate Pharmacy Program who is entering the junior or senior class. Recipients must demonstrate financial need, academic stability, and soundness of character.

**Robert G. Keene Memorial
Scholarship Fund**
All Colleges

This fund was established in 1979 in memory of Robert G. Keene, a graduate of Lincoln College, Class of 1972. The endowment funds were provided by the friends and associates of Robert G. Keene and by the Polaroid Corporation, where he served as an Engineering Manager. The income from the fund will be awarded annually to an undergraduate student who demonstrates financial need as well as strong character and initiative. Primary consideration will be given to children of Polaroid employees.

**The Martin Luther King, Jr.,
Scholarship**

The Martin Luther King, Jr., Scholarship is granted annually to incoming freshman, graduate, and transfer minority students who have demonstrated the philosophy of peaceful coexistence and change through nonviolent means espoused by Dr. King and who have an above-average scholastic record. The scholarship, in the amount of \$500, requires a minimum grade point average. Financial aid based on need is available to supplement the scholarship.

**Andrew C. Knudsen
Memorial Scholarship**

The Andrew C. Knudsen Memorial Scholarship was established in 1982 by Johanna M. Knudsen in memory of her beloved brother, Andrew C. Knudsen, LI'52, B'55, who passed away on April 14, 1978. The scholarship award is to be made annually to two students, preferably one in the College of Engineering and one in the Alternative Freshman Year program who have demonstrated leadership qualities, proven worthy, and are of good character with a financial need. The awards are to be made annually from the income of the fund.

Vena Morse Lamson Scholarships

All Colleges

These scholarships are provided through the income of a fund established in 1963 by Horatio W. Lamson in memory of his beloved wife. They are awarded annually to needy and worthy students who are enrolled in any of the Basic Colleges of the University. The scholarships are granted by the Committee on Financial Aid of the University without regard to national origin, sex, race, or creed.

**George M. and Irene M. Lane
Scholarship Fund**

All Colleges

This scholarship fund was established in 1979 by the family of Dr. George M. Lane to honor his memory. Dr. Lane's faithful and dedicated service to Northeastern University extended from 1943 to 1975, at which time he retired as Director of University Health Services. The income from the George M. and Irene M. Lane Scholarship Fund is awarded annually to an upperclass member of the University's varsity football or hockey team who demonstrates financial need, academic stability, and soundness of character. Additional family gifts as well as contributions from friends and associates may be added to the scholarship's endowment.

The Irving Landfield Scholarship

All Colleges

This fund was established in 1972 through the generosity of Irving Landfield, a graduate of the School of Commerce and Finance of Northeastern University, Class of 1923. The income from the fund is to be awarded annually to help deserving and needy students who demonstrate a desire to fulfill the limits of their ability in academic and cooperative periods of study. The income from this fund will be administered and awarded by the University without restriction to race, color, creed, geographic origin, or scholastic attainment. It is Mr. Landfield's desire that recipients of the scholarship assume a moral obligation to contribute to the principal of this fund as they may be able, in order to make additional financial aid available for other students in later years.

**Avrom Aaron Leve Memorial
Scholarship**

Psychology

This scholarship fund was established in 1957 in memory of Dr. Avrom Aaron Leve, former Assistant Professor of Psychology. The interest is used annually to provide scholarships for upperclass students majoring in Psychology. The award is made on the basis of academic achievement, financial need, and character.

**William F. Linskey
Scholarship Fund**

All Colleges

This fund was established in March 1980 by alumni and friends of William F. Linskey, an athletic trainer long associated with young athletes in and around the Greater Boston area. A former head trainer for the Northeastern University football team and head hockey coach during the 1942-43 season, Linskey has served the City of Cambridge School Department as head athletic trainer and physical therapist for more than thirty years. The income from the fund will be awarded to worthy students pursuing courses leading to a Bachelor of Science in Education with a specialization in athletic training.

**Russell T. Lowe Memorial
Scholarship Fund**
College of Engineering

This fund was established in 1976 in memory of Russell T. Lowe, a graduate of the College of Engineering, Class of 1953. The endowment funds were provided by the friends and associates of Russell Lowe and by the Barry Wright Corporation, where he served as a member of the Board of Directors and as president of the Industrial and Aero Products Group. The income from the fund will be awarded annually to one or more upperclass students enrolled in the College of Engineering. Preference will be given to Mechanical Engineering majors based upon demonstrable financial need and above-average scholastic achievement.

Edward J. Lynn Scholarship
College of Business Administration —
Accounting

This fund was established in 1984 in honor of Edward J. Lynn upon his retirement by friends and associates and by The Continental Group where he served as controller. Mr. Lynn was responsible for establishing the extensive cooperative education relationships between Northeastern University and his company. The income from the fund will be awarded annually to an upperclass student enrolled in the accounting program of the College of Business Administration. Preference will be given to students who demonstrate financial need and above-average scholastic achievement.

Gilbert G. MacDonald Scholarship
All Colleges

This scholarship was established in 1981 by the family of Gilbert G. MacDonald, former Vice President for Student Affairs and Dean of Students, and the members of the Student Union. The income from the fund will be awarded annually to upperclass students of proven ability and demonstrable financial need. Preference will be given to students who actively participate in the Student Union.

**Dr. Reuben J. Margolin
Memorial Scholarship Fund**
Boston-Bouvé College of
Human Development Professions

The Dr. Reuben J. Margolin Memorial Scholarship Fund was established in 1973 through the generosity of family and friends of Dr. Reuben J. Margolin, an outstanding and dedicated individual and friend who, at the time of his death on April 6, 1972, was Chairman of the Department of Rehabilitation and Special Education at Northeastern University.

The income from the Dr. Reuben J. Margolin Memorial Scholarship Fund is awarded annually to a deserving student admitted to or enrolled in the Graduate School of Boston-Bouvé College of Human Development Professions and majoring in Rehabilitation and/or Special Education. Recipients must demonstrate financial need as well as the personal and professional qualities exemplified by Dr. Margolin.

George T. Marvin Scholarship Fund
All Colleges

This fund was established in 1961 under the provisions of the will of George T. Marvin, a graduate of the Northeastern University School of Law, Class of 1918. Mr. Marvin designated that the income of this fund should be used to provide financial assistance to worthy and needy students to assist them in furthering their education at Northeastern University.

George T. Marvin Scholarships may be awarded to new students seeking admission to Northeastern and to students enrolled as freshmen and upperclassmen. Applicants must have satisfactory records of scholarships as of the time of making application and must demonstrate genuine need and good citizenship.

**Merchants Tire Company
Scholarship Fund**
Business Administration

This scholarship was established in 1972 by Merchants Tire Company in honor of Max Katz, a Class of 1917 alumnus of Northeastern and founder and chairman of the board of Merchants Tire Company. The scholarship is awarded annually with selection preference given to a son or a daughter of a current employee of Merchants Tire Company enrolled as a freshman within the College of Business Administration, who demonstrates financial need, soundness of character, and academic stability.

**Dean Constantine N. Meriano
Memorial Scholarship**
College of Pharmacy and
Allied Health Professions

This scholarship, established by the Class of 1950 of the New England College of Pharmacy and subsequently supported by all Classes of the New England College of Pharmacy and the Northeastern University College of Pharmacy and Allied Health Professions, is named to honor the memory of Constantine N. Meriano, who was the founder, Dean and Chief Executive Officer of the New England College of Pharmacy until his retirement in 1957. In 1962 the New England College of Pharmacy merged with Northeastern University and is now known as the College of Pharmacy and Allied Health Professions. The scholarship is to be awarded annually to one or more students of the College. Selection will be made by the Committee on Scholarships and will be based on financial need, academic stability, and soundness of character.

**George H. Meserve, Jr.,
Scholarship Fund**
College of Arts and Sciences

This scholarship was established in 1979 through the generosity of Robert W. Meserve in honor of his brother, Professor George H. Meserve, Jr., an alumnus of the Class of 1925. Professor Meserve served Northeastern faithfully and with distinction for forty-two years, retiring in 1968 as Professor and Chairman of the Department of Art. Announced at the ceremony dedicating George H. Meserve Hall on the Boston campus, this scholarship benefits worthy undergraduate students who are majoring in Art. Recipients should demonstrate financial need academic stability, and soundness of character.

**Harash Mitroo Memorial Athletic
Scholarship**
All Colleges

This scholarship was established in 1983 through the generosity of the Mitroo family of New Delhi, India, in memory of Mr. and Mrs. Mitroo's son, Harash, a student since 1974 in the College of Business Administration who was killed in an automobile accident in 1978. A talented artist and outstanding athlete, Harash received numerous awards for his paintings and for his athletic abilities, including a medal for his performance in an international cricket match against Ceylon. This scholarship is awarded annually, with preference given to international students, to a member of the varsity men's intercollegiate team in either basketball, football, hockey, or track, who demonstrates financial need, soundness of character, and a spirit of good sportsmanship and fellowship. A trophy, designated as the Harash Mitroo Memorial Trophy in Athletics and inscribed with the names of scholarship recipients will be on permanent display at the University.

**The Clyde W. Morrison
Scholarship Fund**
All Colleges

The Clyde W. Morrison Scholarship was established in 1974 by Clyde W. Morrison, a member of the class of 1942. The scholarship is to be awarded annually to a Braintree resident enrolled as a freshman, with a demonstrable financial need. Selection is made by the Committee on Scholarships.

**Morse Shoe, Inc.
Scholarship Fund**

College of Arts and Sciences

This fund was established in 1984 by Morse Shoe, Inc. Endowment income is to be used to provide scholarship assistance for an undergraduate who demonstrates financial need, academic stability and soundness of character. Preference will be given to students from Massachusetts.

**Frederick W. Muckenhaupt
Scholarship**

All Colleges

This award was established in 1961 by Dr. and Mrs. Carl F. Muckenhaupt in memory of their son, Frederick W. Muckenhaupt, Class of 1959 of the College of Engineering.

The award is to be made annually to a student in good standing on the basis of need. Preference is given to a student enrolled in the Department of Electrical Engineering.

**Elizabeth A. Neilson
Scholarship**

Boston-Bouvé College of
Human Development Professions

The Elizabeth A. Neilson Scholarship Fund was established in 1976 in memory of William H. and Anastasia Neilson, exemplars of the profession of health education during their lifetimes. The income from the scholarship fund is awarded annually to a student(s) with the highest scholastic record majoring in Health Education, who has completed eight quarters of academic study with at least four quarters having been taken at Boston-Bouvé College of Human Development Professions. The student(s) must typify the philosophy of the health education profession.

**Thomas Anthony Pappas
Scholarship Fund**

All Colleges

This fund was established in 1980 by the Thomas Anthony Pappas Charitable Foundation. Endowment income is to be used to provide scholarship assistance to needy students with high scholastic records.

**Power Systems Engineering
Grants-in-Aid**

Electrical Engineering

A number of public utilities and power equipment manufacturing companies in the northeastern part of the United States have made available grants-in-aid ranging from \$1,000 to \$5,000 to assist able freshmen who are interested in pursuing careers in power systems engineering through study programs leading to the Bachelor of Science or Master of Science in Electrical Engineering degrees. These awards are made on the basis of academic achievement in high school and aptitude for, and interest in, the field of power systems engineering, without regard to financial need.

Candidates for such grants-in-aid should apply to the Dean of Admissions at Northeastern University not later than March 1 of the year in which they wish to enter the College of Engineering.

**Lawrence Harlow Pratt Athletic
Scholarship Fund**

All Colleges

This fund was established in 1979 by the Northeastern University Varsity Club in conjunction with the Athletic Development Program Fund Drive to honor and recognize Lawrence Harlow Pratt. For more than four decades, Larry was the spirit of Northeastern athletics. His greatest joys were the young men he persuaded to attend college. He encouraged them, cajoled them, sometimes scolded them, but always inspired them to complete their intercollegiate careers and go on to become outstanding members of the community. The income from the fund will be awarded annually to financially deserving varsity athlete(s).

Charles Protaps Endowment Fund

All Colleges

This fund was transferred to Northeastern University in 1983. It was established through the will of Charles Protaps, a Lithuanian immigrant, who became a common laborer in this country. The purpose of the Fund is to aid men and women of Lithuanian extraction to get a higher education.

The income of this fund will be used to provide low interest loans up to \$500 to needy and gifted students of Lithuanian extraction, who are pursuing a degree program at Northeastern University.

Interest of 5 per cent will begin to accrue when the student either withdraws or graduates from Northeastern.

**The Gay Miller Reese
Memorial Scholarship**

Boston-Bouvé College of Human
Development Professions

The Gay Miller Reese Memorial Scholarship was established in 1971 by Everett Reese, in memory of his wife, and by members of the Class of 1921 at their 50th reunion in honor of their classmate and class president, Gay Miller Reese. This scholarship is to be awarded annually to help a well-qualified upperclassman in Boston-Bouvé College of Human Development Professions acquire the education that could not otherwise be possible. The recipient of this award will be selected by the Committee on Scholarships.

Regional Scholarships

All Colleges

Secondary school students who reside in rural areas of New England, who have demonstrated superior achievement in their studies, and who are strongly endorsed by their principals and guidance counselors may qualify for a Regional Scholarship. Scholarships range from \$200–\$1,400.

The Myer Riesman Scholarship

Nursing

This fund, established in 1969 in memory of Myer Riesman, is used to provide financial assistance to deserving students in the College of Nursing. Preference is given to those students whose clinical experience is at Beth Israel Hospital.

Edward T. Rigney Scholarship

All Colleges

A fund was established in 1978 by a grant from the Trans-Sonics Foundation in memory of Edward T. Rigney, member of the Class of 1941 and co-founder of Trans-Sonics, Inc. Income is awarded annually to a student showing financial need and promise of success in his/her chosen field and who is enrolled in engineering, science, or science-related studies. The scholarship may be granted to a freshman or upperclassman and may be renewed in succeeding years.

Isedore Rosenthal Fund

College of Business-Administration

The Isedore Rosenthal Fund was established in 1981 by Mrs. Isedore Rosenthal and friends in memory of her husband, a distinguished graduate of the School of Commerce and Finance (1925) and the School of Law (1931). Income from the fund is to be awarded each year, based on financial need, to freshman accounting majors for the purchase of books and materials. It is the donor's desire that recipients assume the responsibility in future years to contribute to the principal of this fund as they may be able, in order to make additional resources available for other students in later years.

Frank B. Sanborn Scholarship Fund

Engineering

The Frank B. Sanborn Scholarship Fund was established in 1958 to provide a scholarship or scholarships of not more than \$500 to worthy and needy students selected by the University, without restrictions as to race, creed, or geographic

origin, but with preference being given to students majoring in Electrical, Mechanical, Civil, or Industrial Engineering, in the order stated.

Recipients must be willing to assume a moral obligation to reimburse the fund as they may be able, to make similar financial aid available for other students in later years. There shall be no interest charged and no time specified for reimbursement.

Clinton H. Scovell Scholarships

Boston-Bouvé College of Human
Development Professions

Scholarships are made available to men and women students in Boston-Bouvé College of Human Development Professions through a fund provided by the will of Clinton H. Scovell.

Joseph M. Segel Scholarship

All Colleges

This scholarship fund was established January 9, 1981, by Martin F. Walsh, '52, and his wife, Pauline, to honor Joseph M. Segel on the occasion of his birthday. In 1964 Mr. Segel founded The Franklin Mint, which today is the nation's largest privately-owned mint.

The entrepreneurial ethic of Mr. Segel is much the same as that demonstrated by many Northeastern alumni. It therefore is Mr. Segel's desire that recipients of this award demonstrate this quality and also show financial need.

The Sidney L. Sholley Memorial Scholarship

All Colleges

The Sidney L. Sholley Memorial Scholarship has been established in memory of the founder and first president of Keystone Custodian Funds, Inc. Each year the trustees of the Sholley Foundation, Inc., provide a scholarship of \$3,500 to be awarded by the University to an outstanding incoming freshman student. The recipient is known as the Sidney L. Sholley Scholar.

George A. and Lorraine C. Snell Scholarship

All Colleges

This fund was established in 1973 by Mr. George A. Snell, a graduate of the College of Engineering, Class of 1941, and a member of the Northeastern University Corporation and Board of Trustees, and his wife, Lorraine C. Snell.

The income from the fund is to be awarded annually to one or more students enrolled in the basic colleges of Northeastern University. Selection will be made by the Committee on Scholarships based upon those candidates who demonstrate financial need, academic stability, and soundness of character.

John Stuart Sousa, Jr., Memorial Scholarship Fund

Pharmacy

This scholarship was established in 1968 in memory of John S. Sousa, Jr., of Fall River, Massachusetts, a student in the College of Pharmacy, Class of 1969, by his family and friends. The scholarship is awarded annually with selection preference given to a male or female student entering his/her senior year in the College of Pharmacy and Allied Health Professions who has obtained a cumulative quality-point average of 2.300, demonstrates financial need, participates in extracurricular activities, and is, preferably, a member of a fraternity or sorority.

Southeastern Massachusetts Pharmaceutical Association Scholarship Fund

Pharmacy and Allied Health Professions

This scholarship was established in 1980 by the Southeastern Massachusetts Pharmaceutical Association. The income from the fund is awarded annually to one or more middle, junior, or senior students enrolled in the College of Pharmacy and Allied Health Professions who are residents of the area covered by the Southeastern Massachusetts Pharmaceutical Association (Greater Fall River,

Greater New Bedford, and the Cape Cod areas). Recipients must be Pharmacy majors and must demonstrate financial need, academic stability, and soundness of character.

**Lillian M. Spelman
Memorial Scholarship**
Nursing

This scholarship was established in 1979 by a bequest from Lillian M. Spelman, a resident of Boston who, as a public health nurse, dedicated her life to helping others. Her career began in the West End of Boston in the early 1900s. She served her country unselfishly as a Red Cross nurse in Europe during the First World War. Through this scholarship she continues to help others. Scholarship recipients must exhibit financial need as well as academic stability and soundness of character.

Spofford Scholarship Fund
All Colleges

The Spofford Scholarship is awarded annually to an American Negro, American Indian, or multiracial freshman who demonstrates severe financial need.

**The Stop & Shop
Companies, Inc.,
Student Loan Fund**
All Colleges

Established in 1974 by The Stop & Shop Companies, Inc., the Student Loan Fund is a combination endowment and revolving fund to be funded by \$100,000. This generous gift recognizes the contribution, in human terms, made through the years by Northeastern to Stop & Shop, which at the time the Loan Fund was established counted more than 120 Northeastern men and women in its executive ranks, seven of them vice presidents.

The Loan Fund will assist students who have a substantial investment in their education but are in need of some financial stimulus to aid them in completing their work.

**Student Loan Fund—
Health Professions**

Boston-Bouvé College of
Human Development Professions,
Nursing, and Pharmacy and
Allied Health Professions

In 1974, a foundation established a perpetual loan fund at Northeastern University to benefit full-time students enrolled as middlers, juniors, and seniors in Boston-Bouvé College of Human Development Professions, the College of Nursing, and the College of Pharmacy and Allied Health Professions. This loan fund will aid those students who have a substantial investment in and commitment to the health professions and who require some financial help to complete their preparation.

**Ruth Page Sweet
Scholarship Fund**

Boston-Bouvé College of
Human Development Professions

This fund was established in 1959 by members of the Class of 1919 and alumnae of the Bouvé-Boston School in honor of their classmate, Miss Ruth Page Sweet, Dean of Women in the School from 1929 to 1946, Administrative Director from 1946 to 1948, and Director from 1948 to 1958. The scholarship is presented to a junior or senior who has demonstrated a high level of professional promise indicated by academic record and extracurricular activities.

Alice Taylor Scholarship
All Colleges

Northeastern University recognizes that Alice Taylor, who passed away in 1982, is remembered as a positive force by the Mission Hill community and even more by the tenants of the Mission Hill Extension housing development. Because of

Ms. Taylor's contributions, the University has made available to five freshmen who are residents of Mission Hill Extension, full tuition Alice Taylor Scholarships for the freshman year.

**A. Gilbert Tenney
Scholarship Fund**

Engineering

This fund is in memory of A. Gilbert Tenney, who served as a captain in the Air Force during the Korean War and was killed while in active service. The income from the fund will be awarded to a needy student or students in the field of electrical engineering studying under the Cooperative Plan of Education.

**The Earl H. Thomson
Memorial Scholarship**

All Colleges

This fund was established in 1971 to honor the memory of Earl H. Thomson, a distinguished alumnus of the Class of 1925. Mr. Thomson became an internationally known trademark attorney as senior partner in the firm of Thomson and Thomson. A member of the Northeastern Corporation since 1958 and a Trustee of the University since 1960, he was also a Director of The National Council, former President of the Northeastern Alumni Association, and a member of the Board of Directors of Nu Epsilon Zeta fraternity.

This scholarship is awarded annually to one or more deserving and needy students enrolled as freshmen and/or upperclassmen who demonstrate a desire to fulfill the limits of their ability in academic and cooperative periods of study. The scholarship is open-ended so that additional sums can be added to it in future years and will be administered and awarded by the University without restrictions as to race, creed, geographic origin, or scholastic attainment. It would be Mr. Thomson's desire that scholarship recipients assume a moral obligation to reimburse this or other scholarship funds as they may be able, in order to make additional financial aid available for other students in later years.

**The Eliot F. Tozer
Memorial Scholarship**

Business Administration
and Engineering

This fund was established in 1972 through the generosity of the members of the Class of 1931 in memory of their faculty adviser, Eliot F. Tozer. The scholarship of \$750 is awarded annually to students of proven need in the middler, junior, or senior classes of the day colleges of Engineering or Business Administration. The scholarship is open-ended so that additional sums can be added to it in future years, and will be administered and awarded by the University without restrictions as to race or creed.

Charles Irwin Travelli Scholarships

All Colleges

Numerous scholarships have been given yearly since 1932 to students demonstrating financial need, high academic achievement, and an active interest in University life as shown by participation in one or more major activities. Students are usually honored as recipients of Travelli Scholarships at the completion of their freshman year. Under normal circumstances, these awards will continue through the senior year.

Trustee Scholarships

All Colleges

Established in 1928 by the Board of Trustees of Northeastern University, these full- and partial-tuition scholarships are granted in the Basic Colleges each year to entering freshmen who have demonstrated superior scholastic attainment throughout their preparatory or high school courses.

**Robert E. Turner
Memorial Scholarship Fund**
Business Administration

This scholarship fund was established in 1978 through the generosity of family, friends, and colleagues in memory of Robert E. Turner, a 1952 graduate of Northeastern's College of Business Administration who was associated with the University for eighteen years. The income from this fund is awarded annually to assist a College of Business Administration undergraduate student majoring in accounting who demonstrates financial need, academic stability, and soundness of character.

**Samuel Ulman
Scholarship Fund**
All Colleges

This fund was established in 1960 by Mrs. Samuel Ulman in memory of Samuel Ulman, a student at Northeastern University from 1912 to 1915. The purpose of the fund is to provide scholarship assistance to students in good academic standing who have financial need.

University Scholarships
All Colleges

Northeastern University has for many years maintained a scholarship fund for deserving qualified students. These scholarships are awarded on the basis of need, scholastic standing, and campus citizenship. The recipient of a Northeastern scholarship must be willing to assume a moral obligation to repay the University at some future date.

**The UPS Foundation
Scholarship Fund**
Business Administration

This endowed fund was established in 1982 by the UPS Foundation, the sponsored foundation of United Parcel Services, Inc. The income from this fund is awarded annually to undergraduate students enrolled in the College of Business Administration who demonstrate financial need, academic stability, and soundness of character. In providing scholarships, preference is given to students majoring in the transportation concentration or planning to enter the transportation industry.

**Sabestino Volpe
Scholarship Fund**
Engineering

The Sabestino Volpe Scholarship Fund was established in 1972 through the generosity of Mr. Sabestino Volpe, a distinguished alumnus of the College of Engineering and a member of the Class of 1928. The income from the fund is awarded annually as a scholarship to an upperclass student enrolled in the day Civil Engineering degree program within the College of Engineering. Recipients must demonstrate financial need, academic stability, and soundness of character.

**Henry Ellis Warren
Scholarship Fund**
All Colleges

This endowed fund was established in 1981 by the Warren Benevolent Fund, Inc., to honor the memory of Henry Ellis Warren of Ashland, Massachusetts. The income from this fund is awarded annually to undergraduate students who demonstrate financial need, academic stability, and soundness of character. In providing scholarships, preference is given to students from Ashland or contiguous communities.

**The Jacob Wasserman
Scholarship**
Pharmacy

Established in 1966 by his friends in memory of Jacob Wasserman, this fund is to provide scholarship aid to a senior student in the College of Pharmacy and Allied Health Professions. The award will be made annually on the basis of financial need, academic performance, and personal qualities.

**Robert W. Yesucevitz
Memorial Scholarship**
Criminal Justice

This scholarship fund was established in 1983 in memory of Robert W. Yesucevitz, a federal police officer employed by the United States Federal Protective Service. Officer Yesucevitz was killed in the line of duty while serving at the John F. Kennedy Presidential Library, and this memorial was created by his family and friends, including many police officers. The income from the fund is awarded annually to a first-year student in the College of Criminal Justice who demonstrates academic promise and financial need.

**Joseph P. Zabilski
Athletic Scholarship Fund**
All Basic Colleges

This fund was established by the Northeastern University Varsity Club in recognition of Joseph P. Zabilski's thirty-five years of service to Northeastern University. Mr. Zabilski served with high distinction as teacher, varsity athletic coach, and athletic director. His dedication, enthusiasm, and loyalty to the Northeastern student athlete provided a model for all to emulate. It is with great pride that the Varsity Club membership provides this award in his name.

Other Scholarships

The following scholarships are funded by outside sources. Traditionally, Northeastern University students have been awarded these funds.

Recommendation for the specific award is made by one of the several college scholarship committees or the departments concerned, in conjunction with the Office of Financial Aid. If you feel you are a potential recipient for any of these awards, notify your financial aid counselor in writing.

**Dr. Martin E. Adamo
Scholarship**
Pharmacy

This scholarship of \$100 is given annually by the Boston Association of Retail Druggists in memory of Dr. Martin E. Adamo, the second president of the New England College of Pharmacy.

**American Foundation for
Pharmaceutical Education
Scholarships**
Pharmacy

The Board of Grants of the American Foundation for Pharmaceutical Education provides \$600 to be drawn upon to aid qualified students in the upper three years who are in the upper quarter of their class and who maintain a "B" or higher grade average. It is understood that the students have received or are eligible to receive assistance in an amount at least equal to the grant provided by the Foundation from other University sources in payment of required college expenses. The use of the grant is restricted to the payment of tuition or other required college fees. The recipients are identified as "Scholars of the American Foundation for Pharmaceutical Education."

**The Boston Paper Trades
Association, Inc., Scholarship**
Business Administration

Established in 1966 by the Boston Paper Trades Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated, by cooperative work achievement and extracurricular activities, an interest and potential in the field of sales. The recipient must be of high character, have a good academic record, and be able to demonstrate financial need.

**Boston Society of Civil
Engineers Scholarship
In Memory of
Desmond FitzGerald**
Civil Engineering

In 1931, the Boston Society of Civil Engineers established a scholarship in memory of Desmond FitzGerald, a former president of the Society and eminent hydraulic engineer with a distinguished record of service.

It has been awarded annually since 1931 to an outstanding Northeastern University senior or junior student in the Department of Civil Engineering of the College of Engineering. The presentation is made by the president of the Boston Society of Civil Engineers at the Society's annual meeting in the spring.

**Burroughs Wellcome
Revolving Loan Fund**
Pharmacy

A revolving loan fund was established by the Burroughs Wellcome Pharmacy Education Program to assist deserving pharmacy students in the completion of their education. This fund is established through the assistance of Richard M. Walent, Sheldon Rubin, Fred Matula, Daniel Venuti, and James Harb, members of the National Association of Retail Druggists.

**The William M. Cavanaugh
Memorial Scholarship**
All Colleges

This award, established by the members of the Publicity Club of Boston, is open to men and women of the junior and senior classes who demonstrate talent in the field of communications. The scholarship of \$100 bears the name of the second president of the Publicity Club (1950–1951), who was an able and successful newspaperman.

**Civil Engineering
Department Award**
Civil Engineering

The Civil Engineering Department Award was established by members of that Department to recognize achievement and give financial assistance to a student who has selected a major in the field of Civil Engineering. This award, in the amount of \$100, is financed by gifts from members of the Civil Engineering Department and is awarded to the recipient at the beginning of the sophomore year.

**Consumer Value Stores
Scholarship**
Pharmacy

Preference will be given to a student entering the senior year who will be seeking a career in community pharmacy practice. Students who are working or have worked for Consumer Value Stores will be given added consideration. The final selection will be made on the basis of demonstrated financial need, personal qualifications, and a sound academic record. Two \$500 scholarships are offered each year.

**Electrical Manufacturers
Representatives Club of New
England, Inc., Scholarship**
Electrical Engineering

Established in 1958, this scholarship of \$475 is granted to a student or students majoring in Electrical Engineering, without regard to race, creed, or color. To qualify, students must have real financial need and excellent scholastic standing.

**Frissora Family
Scholarship
Award**

Engineering (Science majors)

This award was established by the Frissora family in 1972. Awards are made to freshmen entering Northeastern University, based upon their high school scholastic record and financial need. Preference is given to students of Italian-American extraction who are pursuing an education in a technically oriented curriculum such as engineering, science, mathematics, premedicine, or nursing.

Application for this scholarship award must be made through the Grand Lodge of Massachusetts, Order Sons of Italy in America, 126 Cambridge Street, Boston, Massachusetts. Students selected will receive a grant of \$300 per year for four years. Funds will be paid directly to Northeastern University.

**Gillman Brothers, Inc.,
Scholarship
Pharmacy**

This scholarship of \$250 is given annually by Gillman Brothers, Inc., to help students further their education in pharmacy.

**Massachusetts State
Pharmaceutical Association
Scholarship
Pharmacy**

This scholarship of \$200, established by the Massachusetts State Pharmaceutical Association, is awarded annually. The recipient must be a resident of Massachusetts.

The Massachusetts State Pharmaceutical Association also awards a number of scholarships of \$100. Applications for those scholarships may be secured from the office of the Association at 11 Beacon Street, Boston.

**McKesson and Robbins, Inc.,
Scholarship Award
Pharmacy**

This award of \$200, given annually by McKesson & Robbins, Inc., is awarded to a worthy student who is in financial need. The award recipient is determined by the College of Pharmacy Scholarship Committee and the Office of Financial Aid.

**The New England Paper
Merchants, Inc., Scholarship
All Colleges**

Established in 1959 by the New England Paper Merchants Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated by cooperative work achievement and extracurricular activities an interest and potential in the field of sales. The recipient must be of high character, be able to demonstrate financial need, and have a good academic record.

**Norfolk County Pharmaceutical
Association Scholarship
Pharmacy**

This scholarship of \$50 is awarded annually to a student who meets the requirements both financially and scholastically and is a resident of one of the member towns covered by the Norfolk County Pharmaceutical Association (Norwood, Dedham, Canton, Walpole, Millis, Needham, Westwood, and Islington, in Massachusetts).

**Connecticut Alumni Rudolf O.
Oberg Scholarships**

All Colleges

Each year the Connecticut Alumni Club awards scholarships to students from Connecticut who have achieved a high academic average in their freshman year and have demonstrated financial need. The scholarships are to be used toward the tuition expense of the sophomore year. These scholarships were established in 1958 to promote Northeastern University among the preparatory schools of Connecticut and, in 1971, were named to honor Rudolf O. Oberg, the former Director of Alumni Relations.

The Phi Kappa Phi Scholarship

All Colleges

Established in 1982 by the University's Chapter of Phi Kappa Phi, the national interdisciplinary honor society, the scholarship is available to a student transferring from Roxbury Community College. The nomination is made by the President of Roxbury Community College in accordance with criteria established by the University's chapter.

**South Middlesex
Pharmaceutical Association**

Pharmacy

This tuition scholarship of \$100 established in 1960 is awarded annually to a pharmacy student enrolled in the third, fourth, or fifth year who is in good scholastic standing and in financial need, and living in the area covered by the South Middlesex Pharmaceutical Association (Arlington, Belmont, Lexington, and Watertown, Massachusetts). The recipient will be selected by the Scholarship Committee.

**South Shore Pharmaceutical
Association Scholarship**

Pharmacy

In June of each year, the Scholarship Committee of the Association will select a freshman living in the area covered by the South Shore Pharmaceutical Association (Quincy, Braintree, Weymouth, Hull, Randolph, Hingham, Holbrook, and Cohasset, Massachusetts), who will be awarded a \$100 scholarship to be applied to the tuition of the first semester of the sophomore year.

**Ernest L. Spencer
Scholarship Award**

Civil Engineering

Established in 1975 by the family and friends of Ernest L. Spencer as a memorial, this award is administered by Ci Epsilon, honor society for civil engineers. Professor Spencer, chairman of the Civil Engineering Department from 1963 until his death in 1975, was a member of the Northeastern University faculty for 36 years.

At the present time income from the endowment provides an annual award of \$500. Nominees are selected from the senior class of Civil Engineering students by the department scholarship committee. Criteria on which the award is based include high academic achievement, active participation in student affairs, and evidence of superior professional promise as demonstrated by high evaluations on cooperative work assignments.

**Springfield Druggists'
Association Scholarship**

Pharmacy

A scholarship of \$100 is offered by the Springfield Druggists' Association. This is to be awarded to a sophomore or junior who maintains the highest average in the Department of Pharmacy and who is worthy and in need of financial assistance. The Springfield Druggists' Association Scholarship Fund was established in 1956.

Honor Societies and Awards

Honors and Awards

The University encourages the achievement of excellence in scholarship by making monetary awards and chartering honor societies in the various academic disciplines.

Honor Societies

The following honor societies are chartered in the Colleges:

The Academy—in the College of Arts and Sciences

Alpha Kappa Delta—in the College of Arts and Sciences, Department of Sociology and Anthropology

Alpha Phi Sigma—in the College of Criminal Justice

Alpha Pi Mu—in the College of Engineering, Department of Industrial Engineering and Information Systems

Beta Alpha Psi—in the College of Business Administration, Accounting concentration

Beta Gamma Sigma—in the College of Business Administration (Massachusetts Delta Chapter)

Boston-Bouvé College of Human Development Professions Honor Society—in the College, all Departments

Chi Epsilon—in the College of Engineering, Department of Civil Engineering

Delta Phi Alpha—national German honor society

Eta Kappa Nu—in the College of Engineering, Department of Electrical Engineering (Gamma Beta Chapter)

Kappa Delta Pi—in the Boston-Bouvé College of Human Development Professions

Omega Chi Epsilon—in the College of Engineering, Department of Chemical Engineering

Phi Alpha Theta—in the College of Arts and Sciences, Department of History (Northeastern Zeta Tau Chapter)

Phi Kappa Phi—national interdisciplinary honor society

Phi Sigma—in the College of Arts and Sciences, Department of Biology

Phi Sigma Iota—in the College of Arts and Sciences, Romance Languages (Iota Zeta Chapter)

Pi Sigma Alpha—in the College of Arts and Sciences, Department of Political Science (Northeastern Delta Gamma Chapter)

Pi Tau Sigma—in the College of Engineering, Department of Mechanical Engineering (Northeastern Tau Chapter)

Rho Chi Society—in the College of Pharmacy and Allied Health Professions (Beta Tau Chapter)

Sigma Epsilon Rho—in University College

Sigma Theta Tau—in the College of Nursing

Sigma Xi—Scientific Research Society of North America

Tau Alpha Pi—in Lincoln College (national engineering technology honor society)

Tau Beta Pi—in the College of Engineering (Massachusetts Epsilon Chapter)

Election to the college honor societies is based primarily upon scholarship, but, before a man or woman is privileged to wear the honor society insignia, there must be evidence of an integrity of character and an interest in the extracurricular life of the University. The societies have memberships consisting of the outstanding men and women in the colleges. Election to an honor society is the highest honor that can be conferred upon an undergraduate.

Awards for Upperclassmen

University awards are determined by scholastic and citizenship achievement. They are presented by appropriate committees headed by the Dean of Students.

The Academy Award

Arts and Sciences

The Academy, the honor society of the College of Arts and Sciences, offers an annual award of \$100 to the sophomore in the College of Arts and Sciences who, during the previous year as a freshman, achieved the highest scholastic record.

**William Jefferson Alcott, Jr.,
Award**

All Colleges

This award of \$200 was established in 1934 by members of the faculty and other friends to perpetuate the memory of William Jefferson Alcott, Jr., a brilliant member of the Northeastern Department of Mathematics from 1924 until his death in 1933. The annual award to a senior is made from the income of the fund "for outstanding performance, either in the way of unusual excellence in routine work or in connection with some intellectual activity outside or beyond the requirements of the curriculum."

**Alumni Awards for
Professional Promise**

All Colleges

Established in 1947 by the Alumni Association, these awards are presented annually at an Alumni Association meeting in the spring of the year. The awards are made to the outstanding seniors in each of the Basic Colleges and in University and Lincoln Colleges who have demonstrated unusual professional promise through their character traits, scholastic achievement, and cooperative work performance.

**The Beta Gamma Sigma
Society Award**

Business Administration

"The purpose of this society shall be to encourage and reward scholarship and accomplishment among students of business administration, to promote the advancement of education in the art and science of business, and to foster integrity in the conduct of business operators."

Election to membership in Beta Gamma Sigma is the highest scholastic honor open to a student in business administration.

The Massachusetts Delta Chapter of Beta Gamma Sigma, the national honor society of colleges of business administration, offers an annual scholarship of \$100 to the sophomore in the College of Business Administration who, during the previous year as a freshman, achieved the highest scholastic record.

**Boston-Bouvé College of
Human Development
Professions**

Honor Society Awards

Boston-Bouvé College of
Human Development Professions

The Society offers an annual award of \$100 to the sophomore in Boston-Bouvé College of Human Development Professions who, during the previous year as a freshman in the College, achieved the highest scholastic record. Each student voted into the Society receives an engraved certificate at a special Honors Assembly.

**Cooperative Education
Awards**

All Colleges

These awards are presented to seniors in the Basic Colleges in recognition of outstanding performance in the Cooperative Education Program, through which they have personified the objectives and ideals of the University. The awards are presented at the Annual Awards Luncheon.

**Sears B. Condit
Honor Awards**

All Colleges

These awards were established in 1940 through the generosity of Sears B. Condit. On Honors Day, Sears B. Condit Honor Awards are presented annually to outstanding students in the senior class. Each award carries a stipend as well as a certificate of achievement.

**Joseph Arthur Coolidge
Achievement Awards**

Physical Sciences

Established in 1977 with funds provided by the will of Joseph A. Coolidge, a distinguished member of the Northeastern University faculty from 1911 to 1954 and Chairman of the Department of Physics from 1912 to 1935, three awards of \$500 each are granted annually to the outstanding sophomore, middler, and junior physical sciences students. These awards are based primarily on distinguished academic achievement, with additional consideration given to soundness of character, participation in extracurricular activities on and off campus, and qualities of leadership. Preference will be given to students majoring in physics, mathematics, or other physical sciences.

**Richard Cardinal Cushing
Scholarship**

All Colleges

The Richard Cardinal Cushing Scholarship was established in 1978 through the generosity of the Massachusetts Committee of Catholics, Protestants, and Jews. The income from the scholarship's endowment will be awarded annually to a Catholic, a Protestant, and a Jewish student who embody the principles of brotherhood and justice and who, through their work on campus, have become positive forces for religious understanding.

Director's Award

The Director's Award of \$100 is made annually by the Director of the African-American Institute to the individual judged by the Director to be the most outstanding black senior. The award is based on involvement in African-American Institute programs and scholarship, as well as interaction with the community at large. The award is presented at the Awards and Unity Banquet in June.

Alfred J. Ferretti Award

Engineering

Tau Kappa Chapter of Pi Tau Sigma, the Mechanical Engineering national honor fraternity, sponsors an annual award to the sophomore mechanical engineering student at Northeastern having the highest scholastic standing. The award is named in honor of Professor Ferretti, who retired June 30, 1961, after forty-three years of service to the University.

**Alfred J. and Laura M. Ferretti
Scholarship**

Engineering

This scholarship was established in 1978 by Professor Alfred J. Ferretti, who retired in 1961 after forty-three years of service to Northeastern University. It honors the memory of Mrs. Ferretti and is to benefit worthy undergraduate students who are majoring in Mechanical Engineering. Recipients should demonstrate high academic achievement by maintaining a minimum average of 3.0 and should be of sound character.

**Luis de Flores
Endowment Fund**

All Colleges

This fund was established in 1964 to provide yearly awards to students in recognition of superior ingenuity, irrespective of general academic standing.

Clara and Joseph F. Ford

Awards

All Colleges

The Ford Awards are made to students who have shown a democratic and tolerant spirit and who are well disposed toward people of all creeds and races. They are chosen from the senior class and judged on the basis of their contributions through participation or leadership and their extracurricular organizations. Students must have demonstrated by their actions that they are particularly tolerant and willing to work with and for other people.

The Harold D. Hodgkinson

Achievement Awards

All Colleges

Established in 1954, the Harold D. Hodgkinson Achievement Awards of \$1,000 each are granted annually to a senior student in Division A and Division B. The winners of the awards are known as the Hodgkinson Scholars for the year in which they are chosen.

The award is based primarily upon distinguished scholastic achievement with due consideration of character, personality, qualities of leadership, cooperative work experience, military record (if any), and service in voluntary organizations and activities. Student leadership accomplishments and professional potential are evaluated in connection with these criteria.

The Hodgkinson Scholars are chosen by a committee of administrative members of the faculty. An appropriate certificate is presented to each recipient as a permanent record of his/her selection.

Kappa Delta Pi Award

Boston-Bouvé College of

Human Development Professions

Kappa Delta Phi honor society offers an annual award of \$100 to the sophomore who, during the freshman year, achieved the highest scholastic record.

Robert D. Klein Memorial

Scholarship

Arts and Sciences

This scholarship was established in 1981 through the generosity of family, friends, and colleagues of Professor Klein, who joined the Northeastern University faculty in 1957, served as acting chairman of the Department of Mathematics between 1969 and 1970 and, from 1977 until his death in 1978, was a professor of mathematics. The scholarship is awarded annually to a freshman student enrolled in the College of Arts and Sciences who demonstrates consistent effort and academic achievement in remedial mathematics, the educational program to which Professor Klein contributed so significantly.

Joseph C. Lawler Memorial

Scholarship

Civil Engineering

This scholarship was established in 1982 by family, friends and colleagues in memory of Joseph C. Lawler, an alumnus of the College of Engineering, Class of 1943 and a recipient of a University Honorary Degree in 1972. Mr. Lawler was a member of Northeastern's Corporation and Board of Trustees. He was chairman and chief executive officer of Camp Dresser & McKee, Inc., the firm where he began his employment as a co-op student of Northeastern. A \$2,000 award will be made annually to an upperclass (middles, junior or senior) full-time undergraduate civil engineering day student who demonstrates exceptional professional promise. Criteria include academic performance, cooperative employer recommendations, demonstrated leadership abilities and/or community service activities.

The Lilly Achievement Award

Pharmacy

The Lilly Achievement Award is given to a graduating senior for superior scholastic and professional achievement. Leadership qualities, professional attitudes, and academic performance will be considered in the selection of the individual for this award.

Julia and Merrill Robert

Lovinger Award

All Colleges

This annual \$100 award was established in 1960 by William Lovinger for the purpose of giving assistance to a student of acceptable scholastic standing who can demonstrate financial need.

Robert Lubets Award

Business Administration

The award was established in 1953 by the Boston accounting firm of Robert Lubets & Company to recognize outstanding professional development and personal growth by students training for careers in accounting. Two hundred dollars will be awarded to a degree candidate who, at the completion of the junior year, has demonstrated the greatest personal growth and professional development as evidenced by improvement in scholastic achievement accompanied by professional aptitude indicative of future success as an accountant.

McKesson & Robbins, Inc.,

Scholarship

Pharmacy

This scholarship of \$200, given annually by McKesson & Robbins, Inc., is awarded to a worthy student in financial need.

Susan L. Orchard

Memorial Fund

All Colleges

In 1978, the Susan L. Orchard Memorial Fund was established at Northeastern in memory of Susan L. Orchard, a former University student. Reflecting Susan's interest in improving the quality of life and opportunities for women, the annual income of this fund will be awarded to mothers pursuing their studies at Northeastern who require financial assistance in order for their children to make use of the University's Day Care Center. Recipients will be selected by the Center's Director and Advisory Committee.

The Phi Sigma Society Award

Arts and Sciences

Phi Sigma, honor society in the Department of Biology, offers an annual award of \$50 to the junior or senior majoring in biology or a related science who demonstrates the greatest research potential. To qualify for the award, the student must be a member of Phi Sigma.

Roland Guyer Porter

Memorial Fund

Electrical Engineering

This fund was established in 1953 by colleagues and friends of the late Professor Roland G. Porter, for many years the head of the Department of Electrical Engineering. Interest from the fund provides an annual award to a student in the Department of Electrical Engineering who best exemplifies the qualities of mind and character that Professor Porter did so much to develop in his lifetime.

President's Awards

All Colleges

On the annual Honors Day, six awards of \$500 each, known as the President's Awards, are presented to the students with the highest records in both divisions of the sophomore, middler, and junior classes.

The William Rand Award

Engineering

The Massachusetts Epsilon Chapter of Tau Beta Pi annually offers an award to the outstanding middler in the College of Engineering. The award is based upon

outstanding scholarship, breadth of interest, and contribution to the University. All middlers with a 3.5 average or above are eligible; the winner is chosen after careful screening and interviews with members of the chapter.

**The Mildred A. Reardon
Scholarship Award**

All Colleges

Delta Pi Alpha Sorority sponsors an annual award of \$100 to a deserving female student in the Basic Colleges. Selection is made by the Dean of Students on the basis of academic standing and other considerations. The award is given in honor of an outstanding alumna of Northeastern and Delta Pi Alpha, whose academic excellence, strength of character, and qualities of leadership have typified the ideal for which the sorority strives.

ROTC Awards

ROTC

Awards totaling \$1,000 are available to ROTC cadets each year. The University offers ten \$50 awards annually—four to sophomores, four to middlers, and two to juniors.

Scabbard and Blade (the cadet officers' honor society) offers one award annually to middlers. The Pershing Rifles (the basic-course honor society) offers a \$50 award to a sophomore Pershing Rifles cadet.

Academic Achievement Awards are won by each cadet in the top 10 percent of ROTC classes. This award, a wreath, is worn above the right breast pocket of the uniform during the year immediately following the year it is earned. Leadership Achievement Awards, consisting of letters of commendation, are awarded to each cadet in the top 10 percent in leadership potential.

Many medals and trophies are also awarded by other organizations to ROTC cadets for achievements in diverse fields.

Nguzo Saba Award

Two Nguzo Saba Awards are presented each year by the African-American Institute to the black male and female who have proved themselves of invaluable service to the black community of Northeastern University and Boston. The award is in the amount of \$100 and is presented at the Awards and Unity Banquet.

Sigma Theta

Nursing

Sigma Theta, the honor society in the College of Nursing, annually offers an award of \$100 to the sophomore in the College of Nursing who, during the previous year as a freshman, achieved the highest scholastic record.

**Professor Joseph Spear Fund
for Excellence in Student
Activities**

This fund was established by the College of Engineering Class of 1923 in recognition of Professor Spear, class adviser and mentor. It was through Professor Spear's devotion and concern for the well-being of the students that he developed and promoted student activities at Northeastern University. Professor Spear has been referred to as the "Father of Student Activities." The purpose of this fund is to provide a source of income that can be awarded annually to juniors and seniors who have made outstanding contributions to student activities.

Max Starr Award

Business Administration

The Max Starr Award in Public Accounting was established in 1968 by the Max Starr Foundation to recognize every other year an outstanding member of the junior class in the College of Business Administration preparing for a career in public accounting. The recipient is chosen on the basis of both academic and cooperative work records as well as personal qualities. The student receives awards of \$250 in both the junior and senior years.

**The Dr. Ruth E. Sullivan
Memorial Scholarship Fund**
Arts and Sciences

This fund was established at Northeastern University in 1976 through the generosity of family, friends, and colleagues of Dr. Sullivan, who was a member of the Department of English from 1968 until her death in 1976. One scholarship is awarded annually to an undergraduate senior who demonstrates academic achievement and excellence in interdisciplinary studies in the liberal arts, such as literature and psychology, the fields to which Dr. Sullivan contributed so significantly.

Tau Beta Pi Award
Engineering

Massachusetts Epsilon Chapter of Tau Beta Pi Association, national honor society in engineering, annually offers a scholarship of \$100 to the sophomore in the College of Engineering who, during the previous year as a freshman, made the highest scholastic record.

Housing

Residence Halls

Northeastern University's location, in one of the most central and exciting sections of Boston, offers the student an opportunity to participate in many cultural and educational activities. With residence halls on the Back Bay campus, between the Museum of Fine Arts and Symphony Hall, the city is at your doorstep. Northeastern's library, student center, and athletic facilities are nearby.

Most of the residence halls have lounge areas and recreation rooms, including color television. Privacy and a quiet study environment are encouraged, but students must recognize that residence hall living cannot provide the privacy and quiet they may enjoy in their own homes. However, the benefits, as well as the occasional inconveniences of living in a community, may contribute to personal growth.

A natural advantage of residence living may be the increased involvement in social and educational activities. Students are encouraged to join the committees that make decisions about student life.

Full- or part-time residence hall staff reside in each residence facility.

Housing Application and Contract

Students requesting University housing on their application for admission will receive a housing application with their certificate of acceptance. It must be returned with the required \$100 nonrefundable housing deposit to the Office of the Bursar, 245 Richards Hall. Assignments, which are made on a first-come, first-served basis, are mailed after receipt of payment of an additional \$400 nonrefundable room-assignment deposit.

A housing contract will be distributed after the application and deposits are received by the established deadline. The freshman contract is for three full quarters; upperclass transfer students must file applications on a quarterly basis as their contract is valid for only one quarter at a time. The upperclass deposit is \$250. Contracts for summer-quarter freshmen are handled on an individual basis in accordance with the student's academic schedule.

Married Student Housing

No University housing is available for married students. However, the University does maintain listings of off-campus rooms and apartments. These are available at the Housing Office, 104–106 Ell Building. **Though the Housing Office has agreed to make this listing available, we do not inspect or endorse the advertised property or space.**

Graduate Student Housing

Full-time graduate students enrolled in a graduate program may reside in a University apartment facility. Assignments are made on a first-come, first-served basis after an application and deposit of \$250 are received. Graduate students must file applications and deposits on a quarterly basis and according to the established deadline.

The Selection

The choice of housing is an important consideration for the first year, and freshmen are encouraged to visit Northeastern before making a decision. Tours of residence halls are available by advance arrangement with the Department of Admissions.

Upperclass and transfer students may live in residence halls or apartments. Freshmen are usually assigned to residence halls unless available space exists only in apartments.

Most rooms are designed to accommodate two students; however, some three- and four-person rooms are available in certain of these facilities. Some residence halls feature “group areas” that house from three to six students in a two- or three-room area.

The University maintains some apartment units for men and women. These apartments accommodate up to four students. Assignments are made, based on the date of receipt of the housing deposit and application. Each unit is fully furnished, and the rental charge includes utilities.

Off-Campus Housing

Arrangements for off-campus housing are the responsibility of the student and the student's family. Though the Housing Office, 104–106 Ell, has agreed to make a listing of off-campus housing available, **we do not inspect or endorse the advertised property or space.**

Fraternity Housing

Certain fraternities provide opportunities for room and board for men at reasonable rates. Information regarding these housing facilities may be obtained from the Housing Office, 104–106 Ell, Northeastern University, Boston, Massachusetts 02115.

Cars

Freshmen living in residence halls are not allowed to have cars or other powered vehicles on campus.

Upperclass students and graduate students are strongly discouraged from bringing cars with them, as the University does not permit overnight parking, and there is a severe shortage of public parking spaces near the University.

Costs for Room and Board Per Quarter*

Women's Residence Halls

Kerr Hall (upperclass students only)	\$1280
157 Hemenway Street	\$1395

Coed Residence Halls

Smith Hall (upperclass students only)	\$1280
Speare Hall	\$1395
Stetson Hall West	\$1395
Stetson Hall East	\$1395
White Hall	\$1280
YMCA (includes cost of single room)	\$1305
115 Hemenway Street	\$1395
119 Hemenway Street	\$1395
400 The Fenway	\$1250

Men's Residence Halls

Melvin Hall	\$1280
Light Hall	\$1280
163 Hemenway Street	\$1395
153 Hemenway Street	\$1395

Apartments (Costs do not include Food Card)

106–122 St. Stephen Street	\$825
Fairwood Apartments—319 and 337 Huntington Avenue	\$755
Museum Villa—454, 458, 460 Huntington Avenue	\$755
407 Huntington Avenue	\$755
Rubenstein Hall—464 Huntington Avenue	\$825
West Apartments—50 Leon Street	\$890
142–148 Hemenway Street	\$825
Museum Villa Renovated Area	\$825

With the exception of the YMCA, all single rooms are charged at an additional rate of \$50. An infirmary fee of \$25 per quarter is charged to resident students.

***Costs and types of residence halls (coed, men, women) are subject to change.**

Security

Security for the residence facilities is provided by trained University police officers. In addition, residents are required to show appropriate identification to the security proctor when entering the residence hall. Guests, both male and female, must sign in with the proctor.

The University police provide escort service for students who wish to go from one section of the campus to another late at night.

University Food Service

The University food plan provides for twenty-one meals per week, and all students who live in University residence halls **are required to participate**. The cost of a food card for those living in an apartment and choosing the food plan is \$640 per quarter. When conditions warrant, such as during weekends and slow periods, the University may close or consolidate certain dining facilities.

Student Activities

The University regards student activities as an integral part of education and provides for a range of activities to arouse your interests and satisfy your inclinations: you are given the opportunity to play intramural sports on a wide variety of teams; write for the *Northeastern News*; broadcast over the student-operated radio station; act, dance, sing, play music; or become involved with student government.

The University encourages relaxation and socializing: you can listen to live music in the Rathskeller, meet new friends, attend a lecture, a film, or a play, or go skiing or camping in the mountains. Once you begin to take advantage of what is available on campus, there's no telling what you will learn or whom you might meet.

If you are a commuter student, it is likely that a good portion of your between-class time will be spent in the Carl S. Ell Student Center. The dominant feature of the main level of this "student building" is the magnificent main lounge. Five stories in height, the lounge will comfortably seat 800 students—a good place for quiet conversation or contemplation. Below the lounge are a cafeteria and the Rathskeller, where the sounds are much more audible. In addition, the Center has a ballroom, music practice rooms, a large gameroom with billiards and table tennis equipment, study space, a typing room, and many meeting and function rooms. The Information Booth staff can help with any questions and also offers printing and photocopying services. The Student Center is that part of Northeastern University where you can relax and really feel comfortable and at home.

Each Monday and Thursday, the hours between 11:30 a.m. and 1:30 p.m. are reserved for student activities. No classes are held during these times, to allow students an uninterrupted period of time for themselves. Student clubs, intramural sports, cultural events, and many other activities are scheduled to provide opportunities to make spontaneous or planned use of your time. You have the chance to become involved in campus activities, whether you reside in the residence halls or are a commuter, without interfering with your academic commitments.

Student Organizations

All-University Activities

- Council of University Programs
 - Council of Alternative Programs
 - Entertainment Committee
 - Film Committee
 - Lecture Committee
 - Student Union (Services Committee)
- NU Freshman Orientation Staff
- Student Alumni Association
- Student Government Association
 - Budget Review Committee
 - Student Affairs Committee
 - Student Center Committee
 - Student Court

Artistic and Musical Organizations

- Band
- Choral Society
- Dance Theatre
- Early Music Players

Jazz Society
Orchestra
Silver Masque



Departmental and Academic Organizations

Accounting Society
Association for Computing Machinery
Beta Biological Society
Black Business Student Association
Black Engineering Student Society
Business Student Advisory Committee
Coalition for the Preservation of African-American Studies
College of Nursing Student Organization Council
Computer League and Educational Users Society
Co-op Student Advisory Committee
Criminal Justice Advisory Council
Criminal Justice Student Security Organization
Economics Club
English Club
Financial Management Association
Human Resource Management Club
Human Services Student Organization
International Business Association
International Co-op Exchange Program Advisory Committee
Marketing Club
Medical Laboratory Science Club
Organization of Forensic Students
Physical Education Majors Club
Physical Therapy Club
Physical Therapy Yearbook
Physics Club
Political Science Student Advisory Committee
Recreation Majors Club
Respiratory Therapy Club
The Script (Physical Therapy Yearbook)
Society for the Advancement of Communication Studies
Sociology/Anthropology Students Association
Speech and Hearing Club
Student Athletic Trainers Association
Student-Faculty Biology Relations Committee
Student Health Records Association
Student Industrial Security Association
Toxicology Student Association

Political and Social Action Organizations

Committee in Solidarity with the People of El Salvador
Students for Environmental Awareness
Students for Safe Energy
Young Democrats
Young Republicans

Media

Cauldron
Northeastern News
Onyx
Spectrum
WRBB-FM



Special Interest Clubs

Amateur Radio Club
Association of the U.S. Army
Brothers of Apple Social Interest
Group
Cheerleaders
Chess Club
Disabled Students Organization
Downhill Skiers
Dragon Karate Club
Flying Club
Groove Phi Groove Social
Fellowship
Hus-Skiers and Outing Club
(NUHOC)
Juggling Club
Karate Club
Lambda: Gay Students
Organization
Model Railroad Club
Pershing Rifles
Photography Club
Sailing Club
Scabbard and Blade
Semper Fidelis (Marines) Club
Shotokan Karate Club
Sport Parachute Club
Students for Life
Tactical Society
Terra Society
Underwater Society
Women's Center

Religious Organizations

Baha'i
Chi Alpha Christian Fellowship
Christian Fellowship
Christian Science Organization
Christian Student Association
Hillel
Islamic Society
Maranatha Ministries

Navigators
Newman Club
Nichiren Shoshu of America
Phanar Orthodox Society
Seekers Christian Fellowship

Ethnic and Cultural Clubs

Arab Heritage Cultural Club
Armenian Club
Caribbean Student Organization
Chinese Student Club
Confederation of Iranian
Students
Federation of Nigerian Students
General Union of Palestinian
Students
Haitian Student Unity
Hellenic Club
International Students Forum
Iranian Student Organization
Irish Club
Korean Student Organization
Latin-American Student Union
Lebanese Student Association
National Black Student Associa-
tion
Organization of Arabic Students
Persian Student Society
Turkish Students Organization
Vietnamese Students
Organization

Graduate Student Organizations

Equal Justice Foundation
MBA Women of Northeastern
Non-Profit Management &
Education Committee
Student Executive Committee of
the Graduate School of
Business

Professional Societies

Public Relations Student Society

New Horizons

This program, sponsored by the Student Activities Department, is designed to provide enjoyment as well as the opportunity to engage in a unique learning experience.

The series of noncredit mini-courses is conducted by qualified persons in special areas of interest. There are no grades, no transcripts, and no examinations. In a few courses, textbooks are required; in areas such as the performing arts, contemporary issues, crafts, or media, a material fee may be required.

Enrollment in courses is determined on a priority basis with first opportunities for registration to full-time undergraduate and graduate students, and on a space-available basis to other members of the Northeastern community.

Course enrollment is limited by the nature of the subject matter and the size of the facility. Registration is on a first-come, first-served basis.

For questions, brochures, or applications to teach a free mini-course, call or visit the Office of Student Activities, Room 255 Ell Center; telephone: 617-437-2634.

HELP Legal Service

HELP Legal Service Plan offers low cost legal service to undergraduate students at greatly reduced rates. Annual membership fee is \$15. Complete confidentiality is assured. Service is available Monday–Friday, 10 a.m.–4 p.m., Room 264, Ell Center, telephone: 437-2636.

Fraternities

Alpha Epsilon Pi

6–8 Capen St.
Medford, MA 02155
395-9458

Alpha Kappa Sigma

29 Greenough Ave.
Jamaica Plain, MA 02130
524-9869

Beta Gamma Epsilon

234 Commonwealth Ave.
Boston, MA 02116
262-1639

Gamma Phi Kappa

11 Vancouver St.
Boston, MA 02115
427-8774

Iota Phi Theta

255 Ell Center

Kappa Alpha Psi

255 Ell Center

Nu Epsilon Zeta

255 St. Paul St.
Brookline, MA 02146
566-9804

Phi Beta Alpha

255 Ell Center

Phi Beta Sigma

255 Ell Center
(Colony)

Phi Gamma Pi

241 Kent St.
Brookline, MA 02146
566-8970

Phi Sigma Kappa

37 Greenough Ave.
Jamaica Plain, MA 02130
524-9893

Tau Kappa Epsilon

30 Mansfield St.
Allston, MA 02134
254-3431

Zeta Beta Tau

42 Chestnut Square
Jamaica Plain, MA 02130
522-5162

Sororities

The recognized sororities and colonies for women also play an important role in the extracurricular life of the University. Although none has a separate house, they can all be reached through the Office of Student Activities, Room 255 EC, or the Intersorority Council adviser in the Dean of Students' Office, 208 EL, at the University. The names of the sororities follow:

Alpha Kappa Alpha
Delta Phi Epsilon
Delta Sigma Theta
Sigma Delta Epsilon
Zeta Phi Beta

Sports

The University provides opportunities for all students to participate in athletic programs that correspond to the abilities and inclinations of most students. We especially wish to provide each of you with a chance to develop skills and competence for lifelong athletic pursuits. Along with many casual, drop-in opportunities are chances for all to participate as members of intramural teams. Examples of intramural sports include touch football, basketball, volleyball, soccer, ice hockey, wrestling, softball, and track.

Professional Societies

Students will benefit in many ways by joining the student chapter of a professional society in an area of study of particular interest to them. They have the opportunity to keep up with latest developments by listening to authorities in that field, to exchange ideas with students from other colleges and universities as well as from Northeastern, and to learn more about professional standards.

If students take an active part by attending regular meetings and social affairs, they may become officers or members of a delegation to meetings outside the University. Such participation may prove invaluable in shaping a career.

The following professional societies, the majority of which are national organizations, are open to upperclassmen in their respective professional fields:

American Chemical Society
American Institute of Chemical Engineers
American Institute of Industrial Engineers
American Society of Civil Engineers
American Society of Mechanical Engineers
American Society of Personnel Administrators
Engineers Council
Institute of Electrical and Electronic Engineers
National Student Nurses Association
Sigma Delta Chi (Journalism)
Society of Women Engineers
Society of Women in Business
Student American Pharmaceutical Association

Photo-Identification Operation

All full-time students, staff, and faculty are required to have an officially approved and properly validated photo-identification card. All students are required to show the card at the Library, athletic events, student elections, Health Services, and the Bursar's or Registrar's Office.

An official I.D. card will be issued to new students at their orientation and registration periods. Replacements for lost cards can be obtained by going FIRST to the Bursar's Office, 248 RI, and then, for the photo, to 251 Ell Center between the hours 11:30 a.m.–2:30 p.m., Monday through Friday. A charge of \$2 is levied for the initial I.D. card; \$5 for a replacement.

Religious Life

Northeastern has genuine concern for the religious and moral development of students of all faiths. A Religious Advisory Board, consisting of administrators and faculty, as well as the full-time guest chaplains, seeks to articulate the needs in this area and facilitate the work of various religious groups on campus. A Chaplains' Association, consisting of the full-time guest chaplains, works cooperatively to emphasize the interfaith dimensions of campus life.

The chaplains also deal with students on a denominational basis at various centers near the campus: Episcopal College Work Center in Brookline; Hillel House on Parker Street; Lutheran Center, 84 The Fenway; and St. Ann's Roman Catholic Parish on St. Stephen Street. In addition, there are numerous religious student organizations on campus, recognized by the Student Affairs Committee and listed under "Student Organizations."

Interfaith chapel services are held in the Bacon Memorial Chapel, located in the Ell Student Center. These voluntary religious services are planned to commemorate special days and events and will be announced sufficiently ahead of time. The Chapel is also used for denominational worship services and special lectures on religion. It is open daily for prayer and meditation and is a frequent setting for weddings of students and alumni.

Men's Athletics

Whether it be on the SuperTurf at Parsons Field in the fall, the ice or hardwood of the Matthews Arena in the winter, or the waters of the picturesque Charles River in the spring, a Northeastern athletic team is a familiar sight, either training or competing, nearly twelve months of the year in the Greater Boston area.

Husky varsity entries have touched down on some prestigious athletic real estate, such as Henley-on-the-Thames, England; Madison Square Garden, New York; and Fenway Park, which is part of Northeastern's Back Bay neighborhood. In fact, one could include the Montreal Olympic Village in the summer of '76, when three Northeastern alumni (more than from any other New England college) were members of the United States Olympic Team, with one alumnus winning a silver medal.

All students are urged to participate in the University's athletic program, which recently added soccer to its list of major intercollegiate sports. The University maintains varsity teams in baseball, crew, swimming, cross-country, track, football, hockey, basketball, and golf. On the intramural and club levels, students may also participate in such sports as sailing, water polo, volleyball, lacrosse, gymnastics, softball, handball, and fencing.

Facilities include the spacious Cabot Physical Education Center, Edward S. Parsons Field, and the Matthews Arena. The Cabot Gymnasium contains four basketball courts, a gymnastics lyceum, wrestling and aerobics room, a cage for indoor track and soccer, and six modern racquetball courts. Parsons Field, home of the Huskies' football stadium, with its new SuperTurf surface, also features the Northeastern baseball diamond. It also accommodates training areas for the outdoor track team. The Northeastern crew casts off from their boathouse, located on the Memorial Drive side of the Charles River, and also works out in the Cabot Complex, where rowing tanks are located.

The hockey and basketball teams play their home games in the historic "Boston Arena"—now the Matthews Arena, named for University benefactors George and Hope M. Matthews. The Arena is located near the main quadrangle of the campus and, in addition to ice, provides a portable floor for the Husky basketball team.

Matthews Arena is the oldest ice hockey rink in the world, and features a seating capacity of 6,500 and some of the finest sight lines of any rink in the nation. Within the past two years, both the men's basketball and hockey teams surged to NCAA Championship play by earning conference titles under the roof of the Matthews Arena.

The Northeastern hockey team won a record breaking twenty-five games en route to an ECAC Championship in 1982, and the basketball team has averaged twenty wins per season over the last three years and captured two ECAC North Atlantic Conference crowns.

Northeastern annually fields one of the most competitive football teams in New England, Division IAA Independent. In their forty-eight-year history of football, the Huskies have enjoyed three undefeated seasons and, in 1963, earned a berth in the Eastern Bowl. Northeastern always plays a demanding schedule, including in recent years such opponents as Lehigh, Delaware State, James Madison, UMass, Boston University, New Hampshire, and Rhode Island. Last season they had a successful 6-4-1 campaign.

The University's hockey team traditionally is one of the strongest in the East, while the basketball team has asserted itself as a bona fide, National Division 1 power. Last year, the hockey team added the prestigious Beanpot Championship to a long list of tournament victories which include an ECAC Championship and an ECAC Holiday Hockey Tournament in Madison Square Garden. Along with "city" rivals, Boston University, Harvard, and Boston College, NU spends its first two Mondays in February playing in the Beanpot before a packed Boston Garden house. In fact, in 1980 and 1984, Northeastern won the men's and women's Beanpot Championships in the same year.

The basketball Huskies wage their roundball wars in the tough, Division 1 ECAC North Atlantic conference of the NCAA. They play local powers such as Boston College, Holy Cross, and Boston University and are frequently flying out to meet some of the nation's best, such as Purdue, Georgia, Southern Mississippi, Princeton, Syracuse and 1983 NCAA Champion North Carolina State. Even against the best in the East, Northeastern has had seventeen winning seasons in the last twenty-one campaigns.

To discuss track and cross-country in New England is to talk about Northeastern track and cross-country. Northeastern has dominated the NE track and field scene for the last ten years; in that stretch, the Huskies have captured seven New England indoor titles and five outdoor championships. Both indoors and outdoors, the Huskies are the defending NE Champions. Northeastern has many alumni running for national and international honors as members of top track and field clubs.

Northeastern also fields a strong golf team which competes in all the major Eastern tournaments.

The most amazing Husky sports story is that of varsity crew, however. In 1965, its first season, the NU crew won four of five regattas and the small college rowing championships and became the first NU team to participate in international competition when it rowed in the Henley Royal Regatta. The next year, the Huskies moved into the major college rowing league. They culminated their swift rise by winning the Eastern Sprints

in 1972 and 1973 and rowed in the finals of the Grand Challenge Cup of the Henley Royal Regatta. In 1973, they were considered the finest eight in the country. In 1978, the freshman crew won the Eastern Sprints and was invited to row the Thames Challenge Cup race at Henley. Last year, the varsity placed third in the National Collegiate Championships.

Northeastern has buttressed its physical fitness facilities campus-wide and accommodates the daily influx of undergraduates, graduates, staff, and faculty at Cabot Gymnasium and the Matthews Arena. One of the most popular accoutrements is the five-year-old Nautilus weight-training room, equipped with revolutionary Nautilus apparatus and traditional free weights. Six racquetball courts are also available to students, faculty, or staff members. Also, daily ice time is set aside at the Matthews Arena for the University community and the public as well.

Women's Athletics

From a very small program with very few resources, the Northeastern University women's intercollegiate athletic program has grown rapidly in the past several years, reflecting the tremendous growth in women's athletics at all levels. The program now encompasses twelve activities: basketball, crew, cross-country, field hockey, gymnastics, ice hockey, lacrosse, swimming and diving, tennis, track and field (indoor and outdoor), and volleyball.

As members of the NCAA, Northeastern University subscribes to all policies and regulations of the Association. Athletic scholarships are available to women student athletes in all programs.

Northeastern's goal is to provide an excellent program of intercollegiate athletics for all women students who qualify. The programs are in the mainstream of the exciting growth in women's athletics throughout the country.

The field hockey and lacrosse teams, using the astroturf at Edward S. Parson's Field in Brookline as their home field, have long been regarded as among the strongest in New England. The basketball and volleyball programs, working out of Dockser Hall and Cabot Gymnasium on the Boston campus, have appeared in state and regional championships. The tennis team, with recent steady improvement, is well respected in the region. The gymnastics team, with a vastly upgraded schedule, is striving to reach a high level of regionally competitive scoring.

Two of our younger programs—crew and swimming and diving—have shown rapid improvement. Members of crew have been selected for participation in Olympic Development Camps, have been gold medal winners at the National Sports Festival and at the NWRA National Championship.

The three newest teams—cross-country, ice hockey, and track and field—have moved out of "rookie" status. The ice hockey team, which makes its home in the beautifully renovated Matthews Arena, has become one of the strongest in the country, in addition to winning the local Beanpot Tournament in 1980 and 1984. Track continues its development.

Moving toward excellence in all programs, Women's Athletics looks forward to an exciting year. Specific policies and guidelines relating to academic eligibility for athletics will be distributed in writing to all student athletes.

Freshman Orientation Programs

Except for the visits students will make to the Admissions Office, the first opportunity to learn about Northeastern and to meet classmates, deans, and advisers will come during the freshman orientation period.

The program for orientation is planned and supervised by the Director of Orientation who will see to it that students are introduced to the customs and people that make up the University. At that time, registration, class schedules, and other procedures and details necessary for enrollment will be completed.

During the orientation period, in accordance with a long-standing tradition, students will be welcomed by the President at a special convocation. They also will be able to meet with deans and others who will have important roles in their college careers.

Upperclass students generously volunteer their time to assist in setting up and running programs, primarily evening events, that provide opportunities for relaxation, recreation, and cultural enrichment. The Office of the Dean of Students is available during the orientation period and throughout the year to answer questions and provide assistance.

Office of Freshman Affairs

Anthony J. Bajdek, M.A., Associate Dean and Director

The Office of Freshman Affairs bears particular responsibility for monitoring and facilitating the academic progress of freshmen by providing academic and personal counseling and appropriate administrative action. Freshman Affairs applies academic policy, authorizes changes of major (both within and between colleges), and prepares special course schedules for students who change their majors, as well as for those with advanced placement or advanced standing credit. In addition, the Office of Freshman Affairs surveys the academic status of all freshmen.

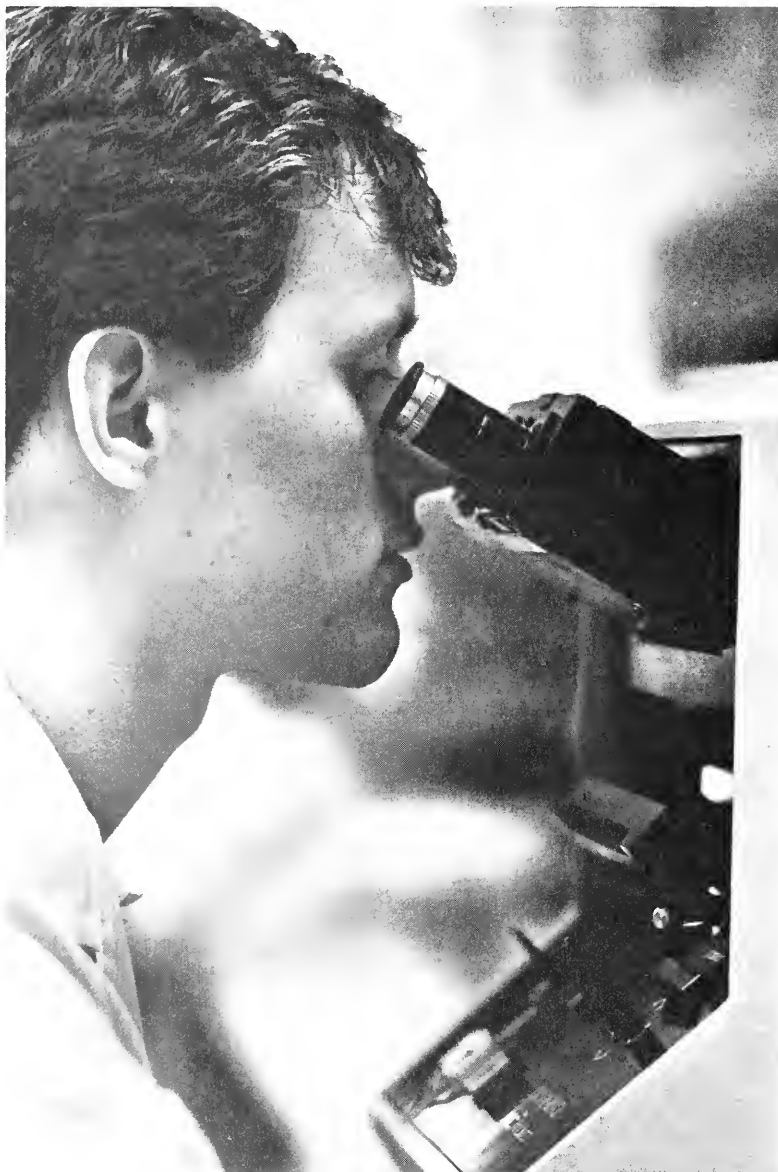
The staff identifies freshmen with deficient academic records for academic probation, authorizes summer corrective work, and reenters eligible students at the freshman level. Midway through each academic quarter, a computer-based Interim Academic Status Report system, involving progress reports prepared by instructors of freshmen, provides detailed evaluations for use by students and the 180 faculty who serve as their advisers. This evaluation is a preventive measure, designed to help detect and correct potentially failing freshmen.

To support academic progress, the Office of Freshman Affairs coordinates compensatory education programs for freshmen, manages the freshman advisory system, and conducts appropriate research to measure the success of specific academic support activities.

When students complete the three academic quarters of the freshman year, the Office of Freshman Affairs reviews their academic records to determine eligibility for sophomore status.

Part Four

General Information



General Information

History

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. By special enactment, the state legislature has given the University general degree-granting powers. The University is governed by a Board of Trustees who are elected by and from the Northeastern University Corporation, which is composed of almost 200 distinguished business and professional men and women.

From its beginning, Northeastern University's dominant purpose has been the discovery of community educational needs and distinctive and serviceable ways of meeting them. The University has not duplicated the programs of other institutions, but has sought to pioneer new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Arts and Sciences (1935), Education (1953), Pharmacy (1962), Nursing (1964), Boston-Bouvé College (1964), the College of Criminal Justice (1967), Lincoln College's daytime Bachelor of Engineering Technology Program (1971), and by University College in a special pilot program (1980). This educational method offers students the opportunity to gain valuable practical experience as an integral part of their college programs and also provides the means by which they may contribute substantially to the financing of their education. The plan has been extended to the graduate level in criminal justice, engineering, rehabilitation administration, professional accounting, business administration, and law.

In the field of adult education, the University offers graduate and undergraduate degree programs and noncredit programs that are specifically designed to meet the needs and interests of adults who wish to further their education on a part-time basis.

All formal courses of study leading to degrees in the Graduate Division, Lincoln College, and University College are approved by the undergraduate faculties concerned and are governed by the same qualitative and quantitative standards as the regular day curricula. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and at other off-campus locations near Boston.

Policy on Changes of Program

The University reserves the right to withdraw, modify, augment, or change the order or content of courses in any curriculum.

It further reserves the right to change tuition, and fees charged, and other regulations.

Any changes which may be made from time to time pursuant to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

Textbooks and Supplies

The Northeastern University Bookstore, located on the ground floor of the Ell Student Center, is a department of the University and is operated for the convenience of the student body. All books and supplies that are required by the students for their work in the University may be purchased at the Bookstore.

The Academic Year

Northeastern University operates on a quarter-system calendar.

Quarter-Hour Credits

All courses are evaluated in terms of quarter-hour credit. A quarter-hour credit is equal to three-fourths of a semester-hour credit.

Grades and Examinations

Examinations covering the work of the quarter usually are held at the close of each quarter. Exceptions may be made in certain courses where, in the opinion of the instructor and with the approval of the dean of the college concerned, final examinations are not necessary.

Pass-Fail System

Students may register for a limited number of courses on a pass-fail basis. Each college has its own rules governing this system. Common to all colleges, however, is the grading system. Pass-fail grades are not included in the calculation of the quality point average. Only pass grades earn credits toward degree requirements. (Pass-fail guidelines are also stated in the *Student Handbook*.)

Grades

A student's grade is officially recorded by letter. Introduced in September 1980, the following grades, listed below with their numerical equivalents, are in effect:

A	4.000
A-	3.667
B+	3.333
B	3.000
B-	2.667
C+	2.333
C	2.000
C-	1.667
D+	1.333
D	1.000
D-	.667
F	0

A general average of C- is not acceptable and will not allow a student to continue at Northeastern University.

Freshman students who are taking a full academic program and who have a weighted average for the year below 1.4 will not be permitted to register for advanced work. Upperclass students should consult the *Student Handbook* to ascertain the level of continuing achievement required of them by the faculty of their college.

An I, or X (Incomplete), grade is used to show that the student has not completed the course requirements.

An official University grade report is mailed to each student at the end of each quarter.

Transcripts

Applications for transcripts of record are made at the Registrar's Office (120 HA). A charge of \$2.00 is made for each transcript request.

Writing Requirement

Beginning with the Fall Quarter of 1984, all Basic Day College freshmen must successfully complete an all University writing requirement in order to fulfill their graduation requirements. The requirement also applies to

all transfer students matriculating at the University beginning in the fall quarter of 1984.

As a requirement for graduation with a bachelor's degree, each student must successfully complete two quarters of basic composition and literature (or equivalent) and satisfy the upper division writing requirement.

The upper division writing requirement may not begin until the student has successfully completed at least eighty quarter hours of academic work (including transfer credit).

The upper division writing requirement may be fulfilled by passing one upper division writing course (four quarter hour course with a C or better) or passing a course, Writing Lab.

The *Basic Day Colleges Course Description and Curriculum Guide* and *The Student Handbook* specify the details of the writing requirement for both 1984 entering freshmen and transfer students.

Dean's List

An Honors or Dean's List is issued at the end of each quarter. The list contains the names of students who have a 3.0 weighted average or higher, with no I grade or grade below C-. Students who are on any form of probation, enrolled in courses on a pass-fail basis (except where there is no alternative or where required by the program), or who are not carrying full loads as determined by their basic college will not be eligible. With few exceptions, as approved by the respective Colleges, a full load is normally considered to be four courses or sixteen quarter hours.

Dean's List with Honor	3.000–3.490
Dean's List with High Honor	3.500–3.740
Dean's List with Highest Honor	3.750–4.000

Reports on Scholastic Standing

Reports for all students are issued at the end of each grading period. Questions about grades are to be discussed with the student's faculty adviser.

At the end of the academic year, juniors will receive, in addition to their term reports, a complete cumulative copy of their permanent records so that they may be aware of any discrepancies in their records and, if so, should contact the dean of their college.

Students are constantly encouraged to maintain an acceptable quality of college work. Parents and students are always welcomed by the college officers and faculty advisers for conference upon such matters.

Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it necessary to do so. Specific details of the law as it applies to Northeastern are printed in the *Student Handbook*, which is distributed annually at registrations.

It is the policy of Northeastern University to deal with the student in all academic and administrative matters. If parents require any information regarding the progress of their son or daughter, they may contact the Dean of Students' Office.

General Conduct

It is assumed that students come to the University for a serious purpose. The University community expects each student to respect the rights

and privileges of others and to adhere to acceptable standards of personal conduct. Students should exercise their freedom with maturity and responsibility. They are expected to obey University regulations and follow the instructions of and pay due respect to University officials. Conduct inconsistent with the general order of the University may result in disciplinary action. Damage to any building or to any of the furniture, apparatus, or other property of the University will be charged to students involved.

Any form of academic dishonesty is regarded as a most serious offense and renders the offender liable to disciplinary action. Aiding and abetting a student in any dishonesty is also held to be a grave breach of discipline.

The University administers discipline with a high standard of integrity and a scrupulous regard for truth.

Attendance

Students are expected to attend all meetings of their classes. Absence from regularly scheduled classes may seriously affect the standing of the student and result in the University's dropping the subject or subjects from his or her schedule. Laboratory work can be made up only during hours of regularly scheduled instruction.

Emergency Closing of the University

Northeastern University has made arrangements to notify students, faculty, and staff by radio when it becomes necessary to cancel classes because of extremely inclement weather. AM radio stations WBZ (1030), WEEI (590), WHAV (1490), WHDH (850), WHUE (1150), WILD (1090), WJDA (1300), WKOX (1190), WLLH (1400), WMRE (1510), WNTN (1550), WRKO (680), WTTP (1060), and FM stations WBCN (104.1), WBOS (92.9), WCOZ (94.5), WFNX (101.7), WHTT (103.3), WRBB (104.9), WROR (98.5), WVBF (105.7), and WXKS (107.9) will announce the University's decision to close. Since instructional television courses originate from live or broadcast facilities at the University, neither the classes nor the courier service operate when the University is closed.

ROTC

Military Officers Education Program

Army

Richard A. James, LTC, U.S.A.; M.A., *Professor and Chairman*

General Objectives

The Department of Military Science administers Northeastern's ROTC Program. Regarded by the University as an integral part of its education program, ROTC is available on a voluntary basis to all full-time students. The program's mission is to develop officers—leaders. It offers courses of instruction designed to lead to a commission as an Army second lieutenant.

The ROTC staff consists of active Army officers and NCOs, assigned by the Department of the Army.

Courses of Study

The program consists of the Basic Course (freshman and sophomore years) and the Advanced Course (middler, junior, and senior years) and complements the co-op program by tailoring the courses to the student's schedule.

Enrollment in the Basic Course is voluntary and is open to all full-time students who qualify. Students do not incur a military obligation by participating in the Basic Course.

The Advanced Course is open to all qualified students who meet these prerequisites: (1) completion of Basic Course or approved equivalent, or prior honorable military service; (2) physical aptitude and medical requirements; and (3) age requirements. Students accepted for the Advanced Course execute a written contract that obligates the newly commissioned second lieutenant to a period of military service. Advanced Course students receive a \$100/month stipend (\$2,000 total). They are also paid for the six-week advanced camp normally attended during their junior and senior year.

ROTC Scholarships

The Army ROTC scholarship provides full tuition, fees, textbooks, and \$100 per month to the recipient. Scholarships are available in varying lengths and cover the cadet's remaining academic years. *Noncadets* may apply for scholarships covering their last four or three academic years. These scholarships are merit-based scholarships, and a student's earnings during cooperative work periods do not reduce scholarship payments.

Veterans and Transfer Students

Honorably discharged veterans (enlisted) are a vital part of our cadet corps and will receive special consideration for ROTC entry.

Transfer students, whether or not previously enrolled in ROTC, are also welcome to join our program. They should contact the Department of Military Science concerning their options for program entry.

Uniforms and Equipment

Uniforms are issued without cost to ROTC cadets. A \$35 deposit is required to ensure the return of the loaned property in good condition. Loss or damage to Army equipment, exceeding the deposit, will be charged to the student.

Academic Credits

Regulations of the individual Basic Colleges prevail for ROTC graduation credit. However, students may petition individually their academic department for acceptance of certain courses for graduation credit.

Air Force

John A. Lukasik, Lt. Col., USAF; M.B.A.

Professor and Chairman, Department of Aerospace Studies, B.U.

The Air Force Reserve Officer Training Corps (AFROTC) program offers students an opportunity to earn a commission in the United States Air Force. The student is commissioned as a second lieutenant upon completion of both the Aerospace Studies (AS) curriculum and the requirements for an undergraduate or graduate degree. Northeastern University students may enter the AFROTC program as members of either a four-year or a two-year program. Participation in AFROTC by

nonscholarship students during the first two years of the four-year program carries no commitment to serve in the Air Force.

The AFROTC program is administered by AFROTC Detachment 355, 156 Bay State Road, at Boston University (353-4705). The AS 100 (freshman) and AS 200 (sophomore) classes are held on the Northeastern campus. All other AFROTC classes are conducted at the BU campus.

Four-Year Program Undergraduates may join the four-year AFROTC program by registering for the appropriate Aerospace Studies classes. Students from all academic disciplines, including five-year co-op, may register. Preferred entry is the first semester, freshman year, although students may enter as late as the first semester, sophomore year.

Freshman classes focus on the functions, organizations, and hardware of the Air Force. Sophomore classes concentrate on the history of aerospace power. Complementing the academic classes is a weekly leadership laboratory, during which students are introduced to Air Force customs, courtesies, drill, ceremonies, and lifestyles.

The Air Force uniform and AFROTC books are provided to the student free of charge except for a refundable uniform deposit.

Continuation beyond the sophomore year is not guaranteed. Factors considered include leadership potential, academic performance, field training evaluations, and results of a physical examination.

The non-flying commissioned graduate incurs a four-year active duty service commitment. Navigators incur a five-year, post-training commitment, and pilots incur a six-year post-training commitment.

Two-Year Program Students unable to participate in the four-year AFROTC program are eligible for the two-year program. Prerequisites for entry into the two-year program include (1) at least six remaining academic quarters of undergraduate or graduate study; (2) meeting Air Force physical standards; (3) good moral character; and (4) successful completion of six weeks of field training. Applications for the two-year program require several months for processing. Prospective two-year program members should contact the University AFROTC detachment at least six months prior to proposed entry.

Scholarships Academic scholarships are available for those who qualify. The College Scholarship Program pays for tuition, textbooks, required fees, and a \$100-per-month, tax-free subsistence allowance. Most scholarships are awarded for four years starting with the freshman year. Application is made while the student is a senior in high school. Application forms should be available in the guidance counselor's office or by writing to the Four-Year Scholarship Branch, Air Force ROTC, Maxwell AFB, AL 36112. Scholarships are also available for students already in college. Students may apply for a three-and-a-half, three, two-and-a-half, or two-year scholarship. Call 353-4705 for further details.

Navy ROTC

Northeastern University has a crosstown Navy ROTC program. Both scholarship and nonscholarship programs are available. For further information, please contact Dr. Thomas Moore, Room 202, Hayden Hall, Northeastern University, 360 Huntington Avenue, Boston, MA 02115.

Division of Cooperative Education

Cooperative education is a dynamic system of education based on the principle that students develop most effectively through an educational program that provides for periodic exposure to the world that exists beyond the campus. Through controlled and structured experiences, students bring an enrichment to the classroom that enhances their total development. The essential factors are that satisfactory participation in cooperative education is considered a degree requirement and that the educational institution assumes the responsibility for integrating these experiences into the education process. It is called "cooperative education" because it is dependent upon the cooperation of outside agencies, educators, and students to produce an integrated program.

Studies have shown that the reinforcement of classroom learning by job responsibilities increases a student's motivation and self-confidence. Greater interest in academic work develops when the student sees the relation between job responsibilities and principles studied on campus. These experiences can also help to instill a sense of identity and worth as the student functions as an adult in an adult world.

Northeastern's commitment to cooperative education is illustrated by the diverse but related activities of the four departments within the Division of Cooperative Education. Each department makes a unique contribution to the development of cooperative education and the enhancement of its effect on Northeastern's students.

The Department of Cooperative Education

Paul M. Pratt, M.Ed., *Dean*

Richard E. Sprague, M.B.A., M.Ed., C.A.G.S., *Assistant Dean*

Kathy Sharkey-Jordan, M.Ed., *Assistant to the Dean*

Professors

Nancy J. Caruso, M.Ed.

Charles F. Field, M.Ed.

George K. Howe, M.Ed.

Robert W. Miller, M.Ed.

Anthony R. Rotondi, M.Ed.

Willie Smith, Jr., M.Ed.

Roderic W. Sommers, M.Ed.

Hugh J. Talbot, M.P.A.

Associate Professors

Boreslaw P. Berestecky, M.Ed.

Betsey W. Blackmer, M.Ed.

Richard L. Canale, M.Ed.,

C.A.G.S.

Elizabeth A. Chilvers, M.Ed.

Mark I. Conley, Jr., Ed.D.

Robert D. Deforge, R.Ph., D.Ph.

Rosemarie DiMarco, M.S.

Philip W. Dunphy, M.Ed.

Mary R. Flynn, R.N., M.Ed.

Kenneth R. Hancock, Jr., B.S.

Stephen M. Kane, Ed.D.

Gerard J. Lavoie, M.P.A.

Homer C. Littlefield, B.S.

Judith A. Moll, M.S.

Assistant Professors

Michael A. Ablove, M.Ed.

Robert S. Brown, M.B.A.

Donald L. Eastridge, M.Div.

Jean F. Egan, M.Ed.

Kathleen L. Finn, R.N., M.Ed.

John C. Mulhall, M.S.

Veronica Leona Porter, M.Ed.

Melvin W. Simms, Ed.D.

William A. Sloane, M.B.A.

Robert T. Tillman, M.Ed.

Patrick F. Todd, M.Ed.

Instructors

Peter J. Mollo, M.Ed.

The largest department in the Division, the Department of Cooperative Education is responsible for the administration of the cooperative education program for undergraduate and graduate students at Northeastern. Details on the specifics of operation are explained on page 24 of this catalog and in a booklet entitled *Co-opportunities*, which is available on request from the Department of Admissions.

Life/Career Planning Program

Joseph E. Barbeau, Ed.D., *Director*

The fundamental mission of the Life/Career Planning Program is to offer students a variety of career-related services. Those who may be undecided about their academic major or career direction or who want to explore career options and formulate postgraduation plans may elect any of several courses which are open to all undergraduate majors. In some cases, students are required by their major departments to take a Life/Career Planning course during their freshman year. Students needing assistance with résumés and interviewing may attend regularly scheduled workshops or may use the drop-in résumé critique service of the Career Resource Center. Also available in the Center is an open-shelf collection of print materials and a computer terminal for obtaining information on jobs and careers, local and regional industries, and graduate and professional schools.

International Cooperative Education

Robert E. Vozzella, M.A., C.A.G.S., *Director*

The International Cooperative Education Office offers a wide variety of services to domestic as well as international students. Through the International Exchange Program, qualified undergraduates are afforded the opportunity to be placed abroad for their cooperative work experience. Placements are currently available in the United Kingdom, Ireland, France, Germany, Sweden, Canada, and Israel for students whose academic, linguistic, and professional experience makes them appropriate candidates for positions abroad.

International students may receive assistance on matters relating to their co-op employment, such as social security and tax information, as well as issues involving the verification of their immigration and co-op status.

The course "Working in the United States" which has been expressly created to meet the needs of underclass international students is taught by the staff of the International Cooperative Education Office. It is designed to assist such students to compete more effectively for domestic cooperative education positions and to facilitate their adjustment into the American work force.

Efforts are currently underway to develop new co-op programs in the home countries of international students where the economic and social conditions render such undertakings possible. Initial objectives lie in the fields of engineering, computer science, and business administration.

The Center for Cooperative Education

Paul E. Dubé, M.A., M.Ed., *Director*

Educational institutions and other organizations exploring, developing, expanding, or improving programs in cooperative education contact the

Center for a variety of services. All facets of the establishment, operation, and expansion of programs may be explored with professional consultants familiar with all aspects of cooperative education. In addition to providing technical assistance, the Center will conduct evaluations of cooperative education programs for both educational institutions and employers.

Intensive, short-term training workshops for both new and experienced coordinators of cooperative programs and the four-week Summer Institute in Cooperative Education offering eight quarter hours of graduate credit are among the other services offered by the Center.

The International Center for Education and Work was organized to assist business, industry, education, and government in the design and implementation of programs to effectively relate education, training, and work in countries outside of the United States.

The Center, to help Northeastern better serve its international students and the countries from which they originate, is developing a project to coordinate the efforts of the Cooperative Education Department and those of the international student admissions staff. Employment will be sought and international students recruited in those regions of the world in which economies are strong enough to provide at-home placements for the students during their cooperative education employment periods.

The Cooperative Education Research Center

James W. Wilson, Ph.D., *Asa Smallidge Knowles Professor of Cooperative Education and Director*

The Research Center has two primary functions: to respond to the information needs of the cooperative education community, and to contribute to the body of knowledge about work-related education. To fulfill these functions, the Research Center conducts a variety of studies on issues of national import, such as the influence of co-op on career decision making and after-graduation career paths, and the benefits of co-op participation to employers. The Research Center maintains the only database of information about the more than 900 co-op programs throughout the United States and Canada and a clearinghouse of reports and articles concerning co-op.

Department of Career Development and Placement

Sidney F. Austin, M.Ed., *Dean and Director*

The Department of Career Development and Placement offers a wide range of counseling and placement assistance to all seniors and alumni of Northeastern University seeking employment; to undergraduates seeking admission to graduate schools, including medicine and law; and to students interested in participating in nonpaid, part-time internships in private or public nonprofit agencies for which they may receive academic credit.

Through this department, representatives of hundreds of employers are scheduled to visit the campus each year to interview seniors and graduate students for full-time employment after graduation. A job bank of currently available positions is maintained for alumni who are seeking new opportunities for which they may be qualified. Credential service is

provided for students and alumni seeking positions in fields that require them and for applicants to graduate and professional schools. Regularly scheduled seminars are conducted for seniors and alumni on career development, job-finding techniques, résumé preparation, and effective interviewing. Individual career counseling is available for seniors and alumni of all University programs.

University Libraries

Alan R. Benenfeld, B.Met.E., M.L.S., M.S., *Dean and Director*

"All that mankind has done, thought, gained, or been: it is lying as in magic preservation in the pages of books."—Thomas Carlyle

The University libraries endeavor to provide the informational and bibliographic services required by students and scholars working in subject fields covered by University programs of instruction and research. In all, the collections include more than 500,000 cataloged volumes. In addition, the library holds in excess of 500,000 titles on microform, including the comprehensive *Libraries of American Civilization and English Literature*.

The microform collection includes microprint, microfilm, and microfiche with appropriate equipment for reading.

Periodicals (approximately 3,900 titles received currently), government documents relevant to the University, technical reports, pamphlets, and recordings (more than 5,000) enhance the collections. There are duplicating facilities available in all libraries.

Libraries

The Dodge Library houses the main collections, the main bibliographic resources for the library system, the central processing units, and library administration. Its seven air-conditioned reading rooms, many recently renovated, include the Richardson Room; the Reference Room, with a collection in excess of 20,000 volumes including almanacs, atlases, bibliographies, biographical dictionaries, information on business services, dictionaries, directories, encyclopedias, gazetteers, handbooks and manuals, indexes and abstracts, and technical reports; the Periodical Room; the Documents Room; the Microform Room; the Reserve Book Room, with a 20,000-volume collection; and the Fine Arts Room.

Additional libraries include the divisional libraries of Physics/Electrical Engineering, Mathematics/Psychology, and the Hurtig Hall Library (Chemistry, Biology, and Pharmacy)—all graduate-level collections; the Boston-Bouvé College of Human Development Professions Library; and the School of Law Library. The Suburban Campuses at Burlington and Dedham have their own libraries, and there are also collections at the Marine Science and Maritime Studies Center in Nahant and at the Center for Management Development in Andover.

Northeastern University is a member of the Boston Library Consortium.

Services and Hours

A handbook, A-V aids, bibliographic guides, and lectures introduce students to methods of utilizing the resources of the collections, and a dedicated staff is prepared to help users of the various libraries. All members of the University, and others at the discretion of the Librarian, have the use of reference books, government documents, card cata-

logs, and service. During term time, most libraries are open 7:45 a.m. to 10:00 p.m., Monday through Thursday; 7:45 a.m. to 7:30 p.m. on Friday; 12:00 p.m. to 4:00 p.m., Saturday and Sunday, with certain areas in the Dodge Library open later hours in the evening.

New England Library Information Network

The Northeastern libraries have computerized many operations internally and, in addition, hold membership in the New England Library Information Network. NELINET has been established for the purpose of developing and operating major library support services. It is a network of libraries devoted to sharing financial, human, and material resources to reduce cost and redundancy and to expand the timeliness and variety of services available.

Office of Learning Resources

Mina B. Ghattas, Ph.D., *Director*

The primary mission of the Office of Learning Resources is to help support the instructional and communications needs of the University. The philosophy of the Office of Learning Resources is keyed to that of the University: to provide faculty and students with a comprehensive range of modern and efficient tools for teaching and learning, to support scholarship and inquiry, to communicate effectively, and to be professionally active.

Instructional Development and Evaluation Services Instructional Development and Evaluation Services assists individual faculty with specifying instructional goals, reviewing related literature and materials, examining alternative teaching strategies, producing learning materials, and evaluating course effectiveness. Its training in presentation and teaching techniques is complementary to its basic function of developing instructional units and courses.

Media Production Services Media Production Services coordinates and provides professional consultation and specialized services in graphics, photography, audio recording, television, and multimedia production for various University needs. In a media production laboratory, facilities and assistance are provided for students, faculty, and staff to produce their own materials, such as charts, graphs, illustrations, layouts, overhead transparencies, and photographic slides. Training workshops in media production and utilization may be arranged for organized groups.

Learning Resources Center The Learning Resources Center and its adjunct facility, the Center for Assessment, Tutoring and Enrichment Resources (CATER), furnishes students with tutoring services and individualized study facilities in support of regular course requirements as well as supplemental instruction in many subject areas. Study materials here are presented in varied interactive formats, including programmed texts, audiotapes, videotapes, sound filmstrips or slides, computer-assisted lessons and exercises, and related workbooks. One of the major LRC facilities is its language laboratory. A listening lounge, equipped with a stereophonic sound system, supplies a large selection of classical and popular prerecorded music. A number of terminals that allow users to access the University's central computer are located in the LRC.

Students may use LRC facilities independently or to complete class assignments at no cost during day, evening, and weekend hours.

Instructional Materials Services Instructional Materials Services, which acquires and maintains the collection of NU-owned instructional materials, also provides a rental service for 16-mm films and videotapes obtained from outside sources. Faculty who would like to evaluate instructional materials before purchase make use of its preview service. Preview facilities for all types of materials are available for small-group viewing by members of the University community. An up-to-date collection of research reports, periodicals, instructional materials, catalogs, and other reference volumes on all aspects of instructional media and technology is similarly accessible.

Campus Media Services Campus Media Services makes available all types of audiovisual and video equipment and instructional materials for the support of classroom instruction on a prescheduled basis. Items include film, filmstrip, slide, opaque, and overhead projectors, audio and videotape recorders, TV cameras and monitors, portable public address systems, telelecture equipment, record players, and projection screens. This section also distributes instructional materials from the NU-owned collection, such as 16-mm films, videotapes, filmstrips, film loops, slides, and audio cassettes. Certain equipment is reserved for student use, and students may also borrow instructional materials with faculty approval. A catalog of all instructional materials is available at no charge.

University Health Services

Lane Health Center

Job E. Fuchs, M.D., *Director*

A comprehensive program of medical care is provided to all full-time registered students in the Basic Colleges, both graduate and undergraduate. The University maintains a Health Services Clinic in the Forsyth Building, Room 135, which is open for emergencies at all times and is equipped to deal promptly with any medical condition that may arise. All entering students must submit a pre-entrance physical examination form provided by the Lane Health Center prior to registration. Failure to fulfill this requirement can delay registration and result in a penalty fee and an additional fee for a physical examination. Regular clinic hours for the student body are held by staff physicians from 9:00 a.m. to 4:30 p.m., Monday through Friday. Health Services can be reached at all times by telephoning 437-2772.

Specialty clinics in surgery, orthopedic surgery, gynecology, and fertility control and planning are scheduled at specified hours. Please check times with the Health Services office. Pregnancy testing and venereal disease diagnosis and treatment services are always available during clinic hours. Allergy testing and treatment for students with allergic problems are done at the Lane Health Center at no cost except for a nominal fee for the cost of the extracts. Allergic desensitization injections using extract provided by the student's own physician will be given at no cost provided the extract is received in good condition, properly labeled, and with a dosage schedule. Consultation with the various medical and surgical specialists who are not physically present

in the clinic will be arranged when deemed necessary by a Health Services physician. The cost of the first visit will be borne by the Health Services.

Special X-ray and laboratory procedures that are unavailable in the Health Services but are deemed necessary by a staff physician will be provided. A full spectrum of mental health services is available. A mental health specialist is present daily, and students are urged to use this service even for minor emotional upsets.

All full-time graduate and undergraduate students are covered by a special Blue Cross and Blue Shield policy, which remains in effect continuously from the day of initial registration until the first of the month following withdrawal, dismissal, or graduation. Married students are urged to go to the Finance Office (249 Richards Hall) to purchase supplementary coverage for dependents.

An infirmary is also maintained in the Forsyth Building for the care of students living in University dormitories and apartment houses. The required infirmary fee entitles students to twenty days' care in the infirmary at no additional charge.

Students are urged to come to the clinic *during regular clinic* hours in order to take advantage of all of our facilities.

Department of Education Services

The F. Andre Favat Center The center houses an extensive library of children's literature, books, journals, tests, and other materials designed primarily to support academic programs of Boston-Bouvé College of Human Development Professions, but is open to all University students.

The Reading Clinic The clinic offers a wide range of diagnostic and corrective services for a variety of reading and language problems. It is open to persons of all ages, including University students. With video-taping and viewing facilities, it occupies a suite of fourteen private rooms in Holmes Hall. Faculty members are also qualified to administer such tests as the WAIS, WISC, BINET, ITPA, Bender, and most standardized instruments.

Speed Reading The department offers a noncredit course designed to improve skills in rapid critical and pleasure reading. Offered each academic quarter, the course is available at a reduced tuition rate to students, staff, and alumni of the University.

The Counseling and Testing Center

Philip W. Pendleton, Ph.D., *Director*

The purpose of the Counseling and Testing Center is to offer assistance to students in a wide variety of areas such as career planning, personal and life adjustment problems, study skills, anxiety, choice of major, and interpersonal relationships. At the Center, students are encouraged to discuss their concerns with a counselor, following which they may decide to continue individual counseling, take psychological tests to increase their knowledge of themselves, join a group of students with whom they can share concerns, use self-help tapes, or make use of the Center's extensive file of information about careers and services.

The Center's services are available, without charge, to all students in the Basic Colleges. Students can arrange an appointment by telephoning 617-437-2142 or by visiting the Center in Room 302 E11. Vocational counseling services are also available on a fee basis to high school students and adults.

The counseling services of the Counseling and Testing Center are approved by the International Association of Counseling Services.

Preprofessional Advising

The Pre-Health Professions Advisory Committee, a University-wide group, offers preprofessional counseling for students interested in a career in medicine, dentistry, or related professional medical fields. The Committee members are available to discuss the various medical fields, minimum admissions requirements, and application process.

For students preparing for a career in law, there are also a number of faculty members who can serve as advisers and resource personnel on related curricular and admissions questions.

In addition, the Department of Graduate Placement Services provides information and advice on procedures for admission, preparation of applications, and the scheduling of appropriate admissions tests.

For further information regarding the above, students should contact Ms. Gail Leclerc in 400 Meserve Hall.

International Student Information

The University welcomes qualified students from foreign lands who are adequately prepared to benefit from the educational, cultural, and social opportunities it has to offer. Currently, over 2,100 international students from ninety-five different countries attend Northeastern.

Northeastern University is authorized under federal law to enroll non-immigrant aliens as full-time students in degree-granting programs of its basic undergraduate colleges and graduate schools. Part-time and special students are not included in this authorization.

Because of problems of adjustment experienced by many students from foreign countries, the University makes a special effort to evaluate carefully the educational and financial qualifications of prospective students. The University has an international student adviser and staff to administer to the special needs of these students.

International students who have never attended an institution of higher learning or who have already attended college or a university and want to transfer to Northeastern should write to the Department of Admissions for information and applications. Applicants who have already received a degree or diploma from a university or college and seek information concerning graduate schools at Northeastern should write to the specific graduate school in which they are interested in matriculating.

University admissions policies for international students are found on page 232.

The University does not award financial aid to international students at the undergraduate level.

Office of Multicultural Student Affairs

Roland E. Latham, C.A.G.S., *Dean*

The Office of Multicultural Student Affairs has been created for the purpose of more efficiently meeting needs of Third World students. The Office oversees the coordination and implementation of support services provided by the English Language Center and the International Student Office. Moreover, the Office of Multicultural Student Affairs provides advocacy representation at the upper level of University administration, thereby insuring that Third World student needs are being comprehensively addressed.

The International Student Office

Sally M. Heym, B.A., *Director*

The International Student Office provides a wide variety of services for the more than 2,100 foreign undergraduates, graduates, and faculty at Northeastern. Specific services range from counseling international students regarding immigration regulations and academic, financial, and personal concerns, to issuing forms and official documents which students use to transfer funds from home and travel outside the United States.

The ISO is also a center for international student activities and sponsors such events as ski trips, dinners, tours, picnics, and an International Week in the Spring. It also publishes a quarterly newsletter.

The ISO strives to promote cultural understanding among international students and Americans by presenting cross-cultural communication workshops, orientation programs, and activities. The ISO also acts as a liaison between the various departments and colleges and the many different public and private agencies which have concern for the affairs of foreign nationals in the academic community.

English Language Center

Paul C. Krueger, C.A.G.S., *Director*

The English Language Center provides an important resource for international students at Northeastern. Its goal is to ensure that students who speak English as a second language are proficient enough to carry on full-time studies in a degree program without language-related problems. The Center administers the Intensive English Program, which offers three levels of intensive, noncredit courses in English as a second language—beginning, intermediate, and advanced. Intensive English classes are open to undergraduate and graduate students, as well as to students who come to Northeastern to study English only. Those students also admitted to a degree program in the University may take, with the approval of the Director of the English Language Center and the chairman of the department concerned, one or two courses for credit while studying Intensive English at the advanced level.

The Intensive English Program offers a minimum of twenty-two hours of instruction per week, as well as a number of special services. The weekly program includes classes in English structure and in reading



and study skills, small group tutorials, practice in a language laboratory and in a writing laboratory, and help from a pronunciation specialist as needed. English Language Center staff work closely with staff from the International Students Office, as well as from other offices in Student Affairs, the academic departments, and other University services.

In addition to serving students, the English Language Center provides advice and consultation to the Northeastern community at large. Center staff are available to answer questions from teachers, administrators, and students and are able to design special programs for special needs at short notice.

For more information about the English Language Center call 617-437-2455.

Office of Minority Student Affairs

Keith Motley, M.S. Ed., *Director*

The Office of Minority Student Affairs was created in 1968, to respond to the special needs of minority students in the Northeastern community. Contact with minority students is established prior to registration, continues throughout the first academic year at Northeastern, and thereafter is maintained and encouraged as long as the student wishes.

The staff of Minority Student Affairs provides assistance and guidance in academic matters such as registration, scheduling of courses, choosing an academic program, and developing academic assistance, as well as financial, social, and career counseling. The Office is also a link between minority students and other departments within the University and assists in the resolution of problems that arise with faculty, staff, or administrators. In this context, the Office helps to make the students' personal and academic environment conducive to educational growth.

The academic performance of all Black freshmen is monitored within the Office of Minority Student Affairs and the determination is made as to whether or not a student is in good academic standing, to be placed on probation, or dismissed from the University.

For more information about the Office of Minority Student Affairs, call 617-437-2787.

Academic Computer Services

Robert J. Fitzpatrick, B.S., *Acting Director*

During the last two decades the computer has dramatically evolved from an esoteric research-oriented device for solving large numerical problems to a familiar tool in offices, classrooms and industrial environments. At the same time, it has become accessible to users who are not programmers, and need to know only how to use a program written by someone else for the task they need to perform. At Northeastern, the ongoing expansion of computer facilities reflects the University's recognition of this new technology's growing impact and potential over the next decade.

Academic Computer Services, located in the basement of Richards Hall (telephone: 437-2334), supports research activities of faculty, research personnel, and graduate students, as well as teaching and learning activities at both the graduate and undergraduate levels. The

computational capability of this facility is supplied by three Digital Equipment Corporation VAX-11/780 systems and one Data General Corporation MV/8000 system. Each of these systems is a state-of-the-art 32-bit virtual memory machine optimized for interactive computing. For more advanced applications, there also exists a multiterminal Computervision Computer-Aided-Design / Computer-Aided-Manufacturing (CAD / CAM) system.

Both students and faculty access these systems in a time-sharing environment through video and hard-copy terminals arranged in student and faculty clusters at the Boston, Burlington, and Dedham campuses. Faculty and students can readily obtain programming assistance in order to promote effective utilization of all facilities at all these campuses. There are also a number of dial-in telephone lines, primarily for faculty use. Color-graphics devices and word-processing packages are also available. The primary languages supported are FORTRAN, COBOL, BASIC, PASCAL, PL-1, and Assembler. Numerous software libraries are available for numerical, statistical, and financial applications.

Office of Services for the Handicapped

Ruth K. Bork, M.Ed., *Director*



Very often, the degree of physical accessibility and types of available support services play an important part in a disabled student's selection of a college. An examination of Northeastern University's campus map shows the buildings to be located within relatively close proximity to one another. Nearly all buildings have elevators that are open to use by all. A special advantage at Northeastern is the existence of a tunnel system, constructed prior to 1965, that links most buildings; in the harsh New England winters and during inclement weather, this proves to be a welcome feature to all.

Any student who has a disability-related special need—no matter how small or individual—can receive ready support services from the Office of Services for the Handicapped (OSH). Frequently, students are uncertain about how they may be aided by this office, and in these situations a discussion of possible alternatives can be quite helpful. OSH provides a wide range of support services to eliminate the competitive disadvantages that a disability may create. Services are individually tailored to meet the needs of each student.

If you have a disability, you are strongly urged to meet with the staff in OSH early on in your consideration of Northeastern. Together, you can discuss the types of service that would best meet your needs, and you will have an opportunity to see the campus firsthand. If a visit is not possible, contact the OSH Director by phone or by mail to avoid the unnecessary delays and confusion that may arise with last-minute adjustments; telephone: 617-437-2675 (voice) or 617-437-2730 (TTY).

The following types of assistance are available from the Office of Services for the Handicapped:

Orientation—Tailored to the needs of specific disability groups, orientation utilizes tactile maps for vision-impaired students, interpreters for hearing-impaired students, and accessible routes of travel for mobility-impaired students.

Registration and Preregistration—Assistance to help ensure class accessibility and course adaptation.

Counseling—Personal, academic, and referral services.

Housing—Necessary modification in residence halls.

For the Visually-Impaired Students—OSH assists in securing taped and braille textbooks and materials; readers; campus orientation; tactile maps; and auxiliary aids such as braille, Visualtek reader, raised-line drawing kits, large-print typewriter, talking-book machine, magnifiers, talking calculators, variable-speed tape recorders, and Kurzweil Reading Machine.

For the Hearing-Impaired Student—OSH offers services including oral and sign language interpreters; note takers; TTY; audiometric testing, hearing-aid evaluation, fitting, and orientation; instruction in sign language and speech reading; speech therapy. Sign language interpreting and oral interpreting services will be provided to deaf and hearing-impaired students only after they have been denied such services by their Division of Vocational Rehabilitation, provided the Office of Services for the Handicapped has received information documenting the reason for such denial.

For the Wheelchair User/Mobility-Impaired Student—OSH offers information on appropriate routes of travel, assistance in relocating classes, adaptive physical education, and physical therapy.

General Assistance Services—Includes scribes; advocacy liaison with instructors and other University staff; HP parking; corrective tutoring in English writing, reading, and language problems; special examination situations.

Information Clearinghouse—Offers articles, periodicals, books, and other literature for, about, and by disabled individuals.

The Office of Services for the Handicapped is also the gathering place for the Disabled Student Organization of Northeastern University, which works cooperatively with OSH to plan programs and improve accessibility of services for handicapped persons at Northeastern.

Visitor Information Center

Christopher Mackey, B.A., *Director*

The Visitor Information Center, located in 115 Richards Hall, provides information to visitors to the University campus. The University map; *The Campus: A Guide to Northeastern University*; *All Roads Lead To Northeastern University*; *The Northeastern Alumni Magazine*; *The Northeastern Edition*; and other Northeastern catalogs, pamphlets, and brochures are all available at this convenient, central location. Staff members are ready to personally answer questions, give directions, and provide friendly and accurate advice about the university and its programs to visitors, students, staff, and faculty. Visitors may request a **University Visitor Pass** which will entitle them to a number of special services and premiums, including a special information kit, discounts at the University Bookstore and University events, complimentary posters, and free passes to the Museum of Fine Arts. With a 24-hour notice, visitors or their sponsors may request parking reservations by writing or calling the Visitor Information Center's main telephone number, (617) 437-2736. The Center also produces *The Northeastern University Events Line*, an up-to-the-minute recorded listing of University activities and happenings of interest to the general public and the University community. To find out today's events, call (617) 437-3281.

Office of Parents' Services

Virginia A. Stephanos, M.S.Ed., *Director*

The Office of Parents' Services provides a central counseling and resources operation for parents of undergraduate and graduate students at Northeastern, facilitating the resolution of problems and exchange of information. The Office maintains contact with the various academic deans' offices, with Cooperative Education, Dean of Students, Financial Aid, Housing, Registrar's Office, Bursar, and other administrative departments that may relate to parents' concerns. In addition, the Office also offers parents social and cultural programs to promote a better understanding of Northeastern's diversified academic and administrative departments.

Academic Assistance Center

Maurice Kaufman, Ph.D., *Director*

The Academic Assistance Center is located at 151 Cahners Hall. The Center offers a variety of services for students who wish to improve their academic performance and develop their reading and study skills. It also provides services for students having difficulty with coursework and for students with severe learning problems. The Center diagnoses academic problems, provides instruction, and makes referrals when appropriate.

The Center arranges peer tutoring in subject areas, provides individual and small group instruction in mathematics, provides intensive reading and study skills workshops, and sponsors preparatory and review workshops in mathematics and other selected subjects. Students are encouraged to attend pertinent workshops which are announced each quarter.

Through its Reading Lab, the Center helps students to develop reading comprehension, study habits, vocabulary, and related skills. At the Reading Lab, instruction is supplemented by supervised practice sessions.

Students should contact the Center to receive help in diagnosing academic problems, to improve reading and study skills, and to arrange for group instruction or individual tutoring in specific subject areas. The Center will refer students to other services available at Northeastern when that is appropriate. The Academic Assistance Center can be reached at (617) 437-4300.

Network Northeastern (NNU)

Network Northeastern (NNU) represents the University's entry into the age of education by telecommunications. The Network utilizes the microwave-based Instructional Television Fixed Service (ITFS) system, whereby services are delivered directly to company sites within a thirty-mile radius of the Boston campus. Live classroom instruction is telecast in color to remote sites, where it is viewed in reception rooms equipped with TV monitors and a talkback system. A courier service is also provided. Network Northeastern offers courses in graduate engineering, undergraduate engineering technology, and selected arts and sciences topics.

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Academic Calendar 1984–1985

September 1984

3	Monday	Labor Day. University closed.
4–7	Tuesday– Friday	Final Examinations for Basic Colleges.
10–17	Monday– Monday	Division B vacation.
13	Thursday	Fall Commencement.
14	Friday	Transfer, Foreign and Handicapped students orientation.
17	Monday	Freshman Orientation, Boston Class of 1989. Freshman University registration and testing.
18	Tuesday	Upperclass registration 9 a.m.
18	Tuesday	Transfer registration 2 p.m.
19	Wednesday	Burlington Orientation. New Freshman course registration.
19	Wednesday	9 a.m. Complete Upperclass registration. 1 p.m. complete Freshman course registration.
20	Thursday	Classes begin in Basic Colleges for Fall Quarter.

October 1984

8	Monday	Columbus Day. University closed.
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November 1984

12	Monday	Veterans Day observed. University closed.
22–25	Thursday– Sunday	Thanksgiving Day recess.

December 1984

10–14	Monday– Friday	Final examinations for Basic Colleges.
17–January 1	Monday– Tuesday	Christmas vacation.

January 1985

1	Tuesday	New Year's Day celebrated. University closed.
2	Wednesday	Basic Colleges Only. Orientation of all newly admitted students in Basic Colleges. 9 a.m. upperclass registration Divisions A and C. Start of UC, LC, Graduate Winter Quarter. 1 p.m. registration of continuing freshmen and registration of new freshmen.
3	Thursday	Basic College classes begin 8:00 a.m.
15	Tuesday	Martin Luther King, Jr.'s Birthday. University closed.

February 1985

18 Monday **Washington's Birthday.** University closed.

March 1985

18–22 Monday–Friday Final examinations for Basic Colleges.

25–30 Monday–Saturday Vacation period for all students in all colleges and schools. (Division A vacation).

April 1985

1 Monday Registration for Division B and C and Division A seniors. Registration for freshmen (Quarter Three) at Boston Campus, Burlington Campus, and January freshmen (Quarter Two). Beginning of Spring Quarter. Beginning of Division A work period. No Basic College classes today.

2 Tuesday Basic College classes begin at 8 a.m.

15 Monday **Patriots' Day.** University closed.

May 1985

27 Monday **Memorial Day.** University closed.

June 1985

10–14 Monday–Friday Final Examinations for Basic Colleges (nondegree candidates).

16 Sunday **Commencement.**

17–22 Monday–Saturday Division B vacation.

24 Monday Registration for Divisions A and D and January freshmen (Quarter Three). Beginning of Summer Quarter. Beginning of Division B work period. No Basic College classes today.

July 1985

4 Thursday **Independence Day.** University closed.

September 1985

2 Monday **Labor Day.** University closed.

3–6 Tuesday–Friday Final Examinations for Basic Colleges.

12 Thursday **Fall Commencement.**

9–16 Monday–Monday Division A vacation.

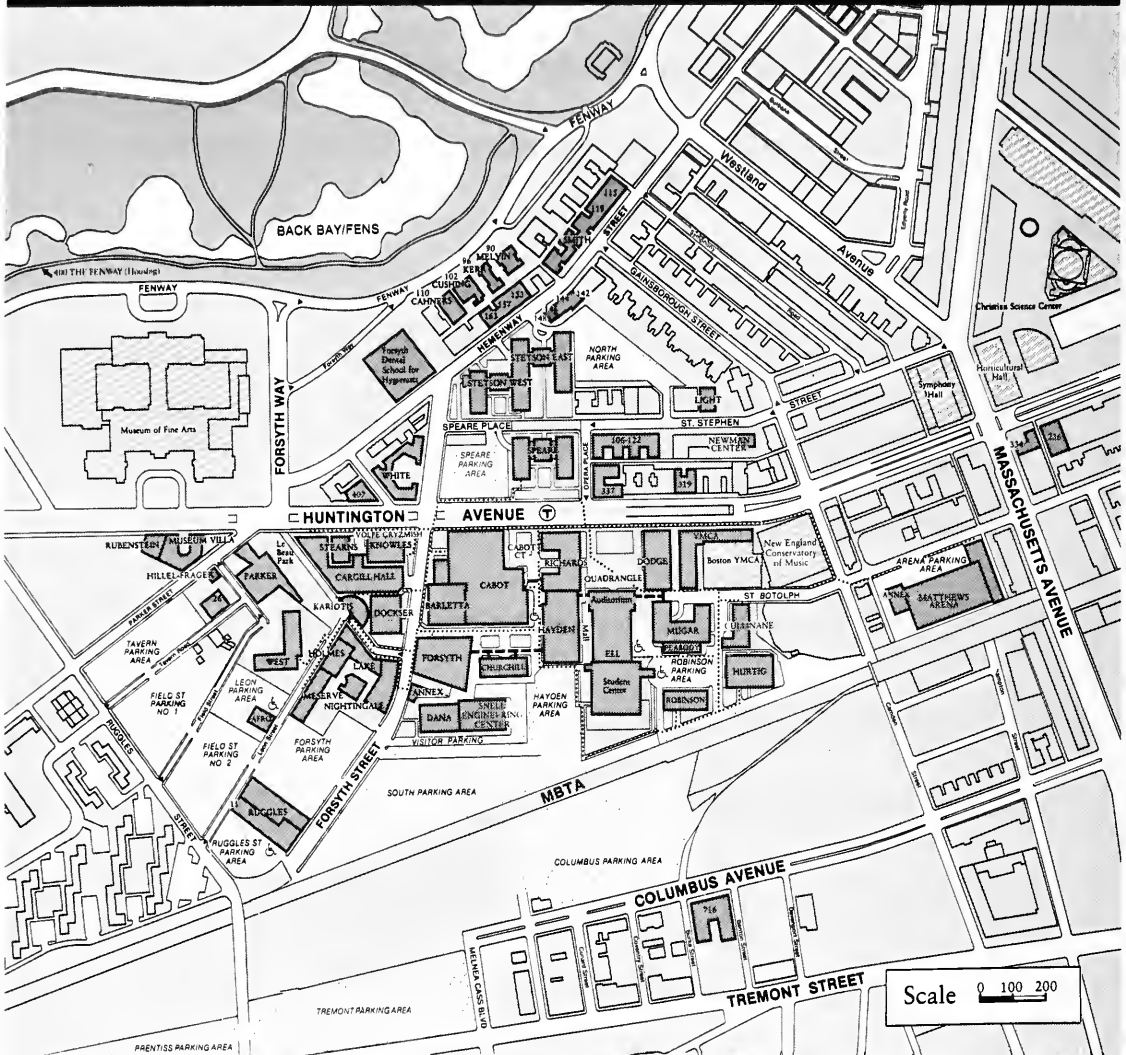
19 Thursday Beginning of 1985–1986 academic year. Basic College classes begin at 8 a.m.

Calendar dates are subject to change. The University community will be notified if such changes are necessary.

Maps are provided by the Visitor Information Center, 115 Richards Hall, extension 2736.

NORTHEASTERN UNIVERSITY

Boston
Massachusetts



A

B

C

D

E

F

Academic and Service Buildings

B	African-American Institute	B	Kariotis Hall
C	Barletta Natatorium	C	Kerr Hall (Faculty Center)
DE	Boston YMCA	B	Knowles Center (Gryzmish Hall)
C	Cabot Physical Education Building	B	Knowles Center (Volpe Hall)
C	Cahners Hall	B	Lake Hall
B	Cargill Hall	F	334 Massachusetts Avenue
C	Churchill Hall	F	Matthews Arena
D	716 Columbus Avenue	EF	Matthews Arena Annex
DE	Cullinane Hall (Boroloph)	B	Meserve Hall
C	Cushing Hall	D	Mugar Life Science Building
C	Dana Research Center	D	(Peabody Health Professions Center)
B	Dockser Hall	DE	Newman Center
D	Dodge Library	B	Nightingale Hall
D	Ell Student Building (Auditorium)	B	Parker Building
D	Ell Student Center (Student Lounge)	B	Peabody Center
C	Forsyth Building	C	Richards Hall
C	Forsyth Building Annex	D	Robinson Hall
C	Hayden Hall	AB	Ruggles (11 Leon Street)
A	Hillel-Frager	C	Snell Engineering Center
B	Holmes Hall	D	122 St. Stephen Street
F	236 Huntington Avenue	B	Stearns Center
DE	Hurtig Hall	A	26 Tavern Road

Key

Academic, Residential,
and Service Buildings

Handicapped Parking

Handicapped Routes

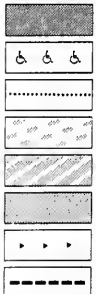
Parking Areas

Public Buildings

Public Parks

Street Direction

Underground Tunnel



Maps are provided by the
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Some buildings on this map are used but
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Gifts and Bequests to Northeastern University

Northeastern University welcomes gifts and bequests to further its educational purposes. It is recommended that those contemplating gifts or bequests confer with the President of the University regarding the needs of the University.

A member of Northeastern University's staff will be happy to consult with those considering a gift or bequest. Planned gifts to the University can often be combined with personal financial goals to produce maximum financial security, as well as significant tax savings for an individual or family.

The legal name of the University is "Northeastern University." In making a gift or bequest, it is recommended the following wording be used: "Northeastern University, an educational institution incorporated under the laws of Massachusetts and located in Boston, Massachusetts."

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University College
Part-Time Programs
1984–1985

August Issue

Northeastern University Bulletin

Part-time day and evening
undergraduate programs in:

Arts and Sciences

Business Administration

Health Professions

Law Enforcement

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Delivery of Services The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements, and acts of public authorities. The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities, or performance, but its inability or failure to do so shall not subject it to liability.

The Northeastern University catalog contains *current information* regarding the University calendar, admissions, degree requirements, fees, and regulations, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, cancelling of scheduled classes and other academic activities, and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

We at Northeastern will do our best to make available to you the finest education we can provide, the most stimulating atmosphere in which to learn, and the most congenial conditions under which you may enjoy the learning experience. But the quality and the rate of progress of your academic career are in large measure dependent upon your abilities, commitment, and effort. You will be a full participant in an educational partnership. We will and, indeed, can only make the opportunities available to you; it is up to you to take advantage of them.

This is equally true with your career upon graduation. We cannot guarantee that you will obtain any particular job; that will depend upon your own skills, achievement, presentation, and other factors such as market conditions at that time. Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern and may vary from state to state. While we are ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because we cannot know what your expectations and understandings are unless you tell us.

In brief, what we are saying to you is that we are here to offer you educational opportunities and choices and to assist you in finding the direction in which you want to steer your educational experience. But you are a partner in this venture with an obligation and responsibility to yourself.

Antidiscrimination Policy Northeastern University is committed to a policy of equal opportunity to all students and employees without regard to race, color, re-

ligion, sex, sexual preference, national origin, or handicap or veteran status. The University prohibits discrimination in all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance.

Equal Opportunity Employment Policy

Northeastern University is an equal opportunity employer. It is institutional policy that there shall be no discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or handicap or veteran status.

Northeastern also prohibits discrimination against any employee regarding upgrading, demotion or transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training. In addition, the University adheres to Affirmative Action guidelines in all recruitment endeavors.

Further, Northeastern will not condone any form of sexual harassment, defined as the use of unwelcome sexual advances, requests for favors, and other verbal or physical conduct of a sexual nature as an explicit or implicit condition of employment, as the basis for employment decisions, or when such conduct interferes with an individual's work performance by creating an intimidating, hostile, or offensive work environment.

Inquiries concerning our equal opportunity policies may be referred to the University Title IX Coordinator/ Compliance Officer for Section 504 of the Rehabilitation Act of 1973, Affirmative Action Office, 175 Richards Hall, 617-437-2133.

Office of Services for the Handicapped The Office of Services for the Handicapped (OSH) provides a variety of support services and general assistance to all of Northeastern's disabled students and employees. The University's efforts to comply with the Rehabilitation Act of 1973 are coordinated by Ruth Bork, OSH director, 5 Ell Center, 617-437-2675.

Emergency Closing of the University

Northeastern University has made arrangements to notify students, faculty, and staff by radio when it becomes necessary to cancel classes because of extremely inclement weather. AM radio stations WBZ (1030), WEEI (590), WHAV (1490), WHDH (850), WHUE (1150), WILD (1090), WJDA (1300), WKOX (1190), WLLH (1400), WMRE (1510), WNTN (1550), WRKO (680), WTPP (1060), and FM stations WBCN (104.1), WBOS (92.9), WCOZ (94.5), WFNX (101.7), WHTT (103.3), WRBB (104.9), WROR (98.5), WVBF (105.7), and WXXS (107.9) will announce the University's decision to close. The TTY telephone number (a Teletype machine) for the hearing-impaired is 437-8516. Since ITFS-based instruction originates from live or broadcast facilities at the University, neither the classes nor the courier service operate when the University is closed.

Disclaimer Tuition rates, all fees, rules and regulations, and courses and course content are subject to revision by the President and the Board of Trustees at any time.

Accreditation Northeastern University is accredited by the New England Association of Schools and Colleges, Inc., which accredits schools and colleges in the six New England states. Accreditation by the Association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators.

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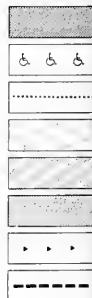
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Key

Maps are provided by the
Visitor Information Center,
115 Richards Hall, extension 2736.
Some buildings on this map are used but
not owned by Northeastern University.
NUP 6.11.4



University College Offices

Office for General Information	437-2400	102 Churchill Hall
Office of the Registrar	437-2314	120 Hayden Hall
Burlington (Suburban Campus)	272-5500	
Burlington (High School)	273-1870	
Belmont Campus	484-4418	
Brockton Campus	584-2444	
Chelmsford Campus	251-8792	
Dedham Campus	329-8000	
Framingham Campus	877-2333	
Lynnfield Campus	334-6027	
Marlboro Campus	485-4122	
Marshfield Campus	837-1835	
Milford Campus	473-2565	
North Attleboro Campus	695-9681	
Revere Campus	289-8113	
Westwood Campus	329-3030	
Weymouth Campus	335-9112	

Regular Office Hours

Boston		
120 Hayden Hall	Monday–Thursday	8:30 a.m.–8:00 p.m.
	Friday	8:30 a.m.–4:30 p.m.
102 Churchill Hall	Monday–Friday	8:30 a.m.–8:30 p.m.
	Saturday	8:30 a.m.–1:00 p.m.
Burlington (Suburban Campus)	Monday–Friday	8:00 a.m.–10:00 p.m.
	Saturday	8:00 a.m.–1:00 p.m.
Burlington (High School)	Monday–Thursday	5:30–10:00 p.m.
Belmont High School	Tuesday & Thursday	5:30–10:00 p.m.
Brockton High School	Monday & Wednesday	5:30–10:00 p.m.
Chelmsford High School	Tuesday & Thursday	5:30–10:00 p.m.
Dedham Campus	Monday–Friday	8:00 a.m.–10:00 p.m.
	Saturday	8:00 a.m.–1:00 p.m.
Framingham North High School	Monday–Thursday	5:30–10:00 p.m.
Lynnfield Middle School	Tuesday & Thursday	5:30–10:00 p.m.
Marlboro High School	Monday & Wednesday	5:30–10:00 p.m.
Marshfield High School	Tuesday & Thursday	5:30–10:00 p.m.
Milford High School	Tuesday	5:30–10:00 p.m.
North Attleboro High School	Monday & Wednesday	5:30–10:00 p.m.
Revere (Abraham Lincoln School)	Tuesday & Thursday	5:30–10:00 p.m.
Westwood High School	Monday–Thursday	5:30–10:00 p.m.
Weymouth North High School	Monday–Thursday	5:30–10:00 p.m.

Summer Office Hours

Boston		
120 Hayden Hall	Monday–Thursday	8:30 a.m.–8:00 p.m.
	Friday & Saturday	Closed
102 Churchill Hall	Monday–Thursday	8:30 a.m.–8:30 p.m.
	Friday & Saturday	Closed
Burlington (Suburban Campus)	Monday–Thursday	8:00 a.m.–10:00 p.m.
	Friday & Saturday	Closed

Dedham Campus	Monday–Thursday	8:30 a.m.–10:00 p.m.
	Friday	8:30 a.m.–4:30 p.m.
	Saturday	Closed
Framingham North High School	Monday & Wednesday	5:30–10:00 p.m.
Marshfield High School	Tuesday & Thursday	5:30–10:00 p.m.

1984–1985 Academic Calendar

Fall Quarter 1984

Classes Begin Monday, September 24, 1984

Fall Registration Dates

Boston	5:00–7:30 p.m. 9:00–12:00 noon 5:00–7:30 p.m. 5:30–8:00 p.m.	Tuesday–Friday, September 4–7 Saturday, September 8 Monday–Wednesday, September 10–12 Monday & Wednesday, September 10 & 12 Tuesday, September 11
Burlington	12:00–3:00 p.m. and 5:30–8:00 p.m. 5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11 Wednesday, September 5 and Monday, September 10 Thursday, September 6 and Tuesday, September 11
Belmont H.S.	5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11
Brockton H.S.	5:30–8:00 p.m.	Wednesday, September 5 and Monday, September 10
Chelmsford H.S.	5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11
Dedham Campus	5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11
Framingham North H.S.	5:30–8:00 p.m.	Tuesday, September 4 and Monday, September 10
Lynnfield Middle School	5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11
Marlboro H.S.	5:30–8:00 p.m.	Wednesday, September 5 and Monday, September 10
Marshfield H.S.	5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11
Milford H.S.	5:30–8:00 p.m.	Tuesday, September 4 and Tuesday, September 11
North Attleboro H.S.	5:30–8:00 p.m.	Wednesday, September 5 and Monday, September 10
Revere (Abraham Lincoln School)	5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11
Westwood H.S.	5:30–8:00 p.m.	Thursday, September 6 and Tuesday, September 11
Weymouth North H.S.	5:30–8:00 p.m.	Wednesday, September 5 and Monday, September 10
Fall Quarter Classes Begin		Monday, September 24
Columbus Day Observed	No Classes	Monday, October 8
Veterans' Day Observed	No Classes	Monday, November 12
Thanksgiving Recess	No Classes	Thursday–Saturday, November 22–24
Final Examination Period for Fall Quarter		Monday–Saturday, December 10–15
Christmas Vacation	No Classes	Monday–Tuesday, December 17–January 1

Winter Quarter 1985

Classes Begin Wednesday, January 2, 1985

Winter Registration Dates

Boston	5:00–7:30 p.m.	Monday–Thursday, December 3–6
Burlington	5:30–8:00 p.m.	Monday–Thursday, December 3–6
Belmont H.S.	5:30–8:00 p.m.	Tuesday, December 4
Brockton H.S.	5:30–8:00 p.m.	Monday, December 3
Chelmsford H.S.	5:30–8:00 p.m.	Tuesday, December 4
Dedham Campus	5:30–8:00 p.m.	Monday, December 3 and Tuesday, December 4
Framingham North H.S.	5:30–8:00 p.m.	Monday, December 3 and Tuesday, December 4
Lynnfield Middle School	5:30–8:00 p.m.	Tuesday, December 4
Marlboro H.S.	5:30–8:00 p.m.	Monday, December 3
Marshfield H.S.	5:30–8:00 p.m.	Tuesday, December 4
Milford H.S.	5:30–8:00 p.m.	Tuesday, December 4
North Attleboro H.S.	5:30–8:00 p.m.	Wednesday, December 5
Revere (Abraham Lincoln School)	5:30–8:00 p.m.	Tuesday, December 4
Westwood H.S.	5:30–8:00 p.m.	Tuesday, December 4
Weymouth North H.S.	5:30–8:00 p.m.	Tuesday, December 4 and Wednesday, December 5
Winter Quarter Classes Begin		Wednesday, January 2
Martin Luther King Jr.'s Birthday	No Classes	Tuesday, January 15
Presidents' Day	No Classes	Monday, February 18
Final Examination Period for Winter Quarter		Monday–Saturday, March 18–23
Spring Recess (or make-up period for lost snow days)		Monday–Saturday, March 25–30

Spring Quarter 1985

Classes Begin Monday, April 1, 1985

Spring Registration Dates

Boston	5:00–7:30 p.m.	Monday–Thursday, March 11–14
Burlington	5:30–8:00 p.m.	Monday–Thursday, March 11–14
Belmont H.S.	5:30–8:00 p.m.	Tuesday, March 12
Brockton H.S.	5:30–8:00 p.m.	Wednesday, March 13
Chelmsford H.S.	5:30–8:00 p.m.	Tuesday, March 12
Dedham Campus	5:30–8:00 p.m.	Monday, March 11 and Wednesday, March 13
Framingham North H.S.	5:30–8:00 p.m.	Monday, March 11 and Tuesday, March 12
Lynnfield Middle School	5:30–8:00 p.m.	Tuesday, March 12
Marlboro H.S.	5:30–8:00 p.m.	Monday, March 11
Marshfield H.S.	5:30–8:00 p.m.	Tuesday, March 12
Milford H.S.	5:30–8:00 p.m.	Tuesday, March 12
North Attleboro H.S.	5:30–8:00 p.m.	Monday, March 11
Revere (Abraham Lincoln School)	5:30–8:00 p.m.	Tuesday, March 12
Westwood H.S.	5:30–8:00 p.m.	Tuesday, March 12
Weymouth North H.S.	5:30–8:00 p.m.	Monday, March 11 and Wednesday, March 13
Spring Quarter Classes Begin		Monday, April 1
Patriots' Day Observed	No Classes	Monday, April 15

Memorial Day Observed	No Classes	Monday, May 27
Final Examination Period for Spring Quarter		Monday–Saturday, June 10–15
Commencement		Sunday, June 16

Summer Quarter 1985	Classes Begin Monday, June 17, 1985
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Registration for entire Summer Quarter

Boston	5:00–7:30 p.m.	Tuesday–Friday, May 28–31
Burlington	1:00–3:00 p.m.	Tuesday, May 28
	and	
	5:30–8:00 p.m.	
	5:30–8:00 p.m.	Wednesday, May 29
Summer Quarter Classes Begin		Monday, June 17

Registration for second five-week term

Boston	5:30–8:00 p.m.	Monday, July 8 and Tuesday, July 9
Burlington	5:30–8:00 p.m.	Monday, July 8
Independence Day Observed	No Classes	Thursday, July 4
Labor Day Observed	No Classes	Monday, September 2
Final Examination Period for Summer Quarter		Held during last class session of each term

Calendar changes may be made. The University community will be notified if such changes are necessary.

The University

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. By special enactment, the State Legislature has given the University general degree-granting powers. The University is governed by a Board of Trustees elected by and from the Northeastern University Corporation, a body of nearly 200 distinguished business and professional men and women.

From its beginning, Northeastern University's dominant purpose has been to identify community educational needs and to meet these needs in distinctive and serviceable ways. The University has not duplicated the programs of other institutions, but has pioneered new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, under which students alternate periods of work and study. This time-tested method of education offers students the opportunity to gain valuable practical experience as an integral part of their college programs and to contribute to the financing of their education. All Northeastern's undergraduate day colleges operate on the Cooperative Plan, which requires five years for the student to earn a degree. The College of Arts and Sciences also offers a four-year noncooperative option. Several of Northeastern's graduate schools have structured their programs to include the features of cooperative education.

In the field of adult education, programs of study have been developed to meet a variety of needs. University College offers evening courses—offered by the University since 1906—and adult day courses leading to the bachelor's degree. In addition to offering day undergraduate programs in Electrical Engineering Technology and Mechanical Engineering Technology, Lincoln College offers evening/part-time certificate, associate, and bachelor's degree programs in technological areas. All formal courses of study leading to degrees through part-time programs are approved by the Basic College faculties concerned and are governed by the same qualitative and quantitative standards as the regular day curricula. Courses are scheduled in the day and

evening at Northeastern's campuses in Boston, Dedham, and Burlington. Evening courses are scheduled in Belmont, Brockton, Chelmsford, Framingham, Lynnfield, Marlboro, Marshfield, Milford, North Attleboro, Revere, Westwood, and Weymouth.

For more information about the undergraduate colleges, their programs, or the cooperative plan of education, contact the Admissions Office, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115, tel. 617-437-2200.

Undergraduate Colleges

College of Arts and Sciences The College of Arts and Sciences offers majors in the arts, humanities, social sciences, and mathematics/sciences leading to the Bachelor of Arts and Bachelor of Science degrees. Curricula are normally four years in length on a full-time plan or five years in length on the Cooperative Plan.

Boston-Bouvé College of Human Development Professions Boston-Bouvé College of Human Development Professions offers programs of study leading to the following degrees: Bachelor of Science in Education in the fields of early childhood education, elementary education (with a minor in special education), human services, physical education, school and community health education, secondary education, and speech and hearing; Bachelor of Science in Recreation and Leisure Studies; and Bachelor of Science in Physical Therapy.

College of Business Administration The College of Business Administration offers a five-year program of academic study and cooperative education leading to the Bachelor of Science degree in Business Administration. Students must complete a six-course concentration in Accounting, Human Resources Management, Marketing, Finance and Insurance, Management, International Business Administration, Entrepreneurship and New Venture Management, Transportation and Physical Distribution Management, or a self-designed concentration.

College of Computer Science The College of Computer Science offers a five-year cooperative education curriculum in Computer Science leading to the degree of Bachelor of Science in Computer Science. Areas of concentration within the program include operating systems, data base management, languages, and artificial intelligence.

College of Criminal Justice The College of Criminal Justice offers a full-time day curriculum on the Cooperative Plan leading to the degree of Bachelor of Science.

College of Engineering The College of Engineering offers five-year cooperative education curricula in Civil (including an environmental engineering option), Mechanical, Electrical (including a power systems option and a computer engineering option), Chemical, and Industrial Engineering and Information Systems leading to the degree of Bachelor of Science with specification according to the engineering department in which the student qualifies. A more general program without specification leading to the Bachelor of Science degree is offered in which students design their curricula around a core of science, engineering science, and engineering courses. For highly qualified students, most departments offer a five-year program leading to both bachelor's and master's degrees; students carry course overloads beginning in the third year. The College also offers part-time programs during evening hours leading to Bachelor of Science degrees in Civil, Mechanical, and Electrical Engineering, extending over six years and meeting the same qualitative and quantitative standards of scholarship as the day curricula.

Lincoln College Lincoln College offers engineering technology programs leading to the degrees of Associate in Engineering, Associate in Science, and Bachelor of Engineering Technology. These programs are made available as:

(a) A full-time day curriculum on the Cooperative Plan leading to the degree of Bachelor of Engineering Technology (B.E.T.) in Mechanical and Electrical Engineering Technology, and in Computer Technology and Aerospace Maintenance Engineering Technology.

(b) A part-time evening program including pre-technology preparatory courses and degree programs leading to the Associate in Engineering (A.E.) and the Bachelor of Engineering Technology (B.E.T.) in Civil, Mechanical, and Electrical Engineering and in Computer Technology. The Associate in Science degree may be earned in Telecommunications and Energy Systems.

The day B.E.T. program is often useful for the high school graduate or the student transferring from a community college or technical institute who desires a full-time day curriculum on the Northeastern Cooperative Plan.

In addition to its traditional curricula, Lincoln College offers technological and professional de-

velopment opportunities to meet special needs of the part-time student.

College of Nursing The College of Nursing baccalaureate nursing program operates on the Cooperative Plan, is five years in length, and leads to the Bachelor of Science in Nursing.

Registered nurses may complete requirements for the Bachelor of Science degree in Nursing full time during the day or part time in the evening. The College of Nursing collaborates with University College in offering the evening section for registered nurses.

College of Pharmacy and Allied Health Professions The College of Pharmacy and Allied Health Professions offers five-year cooperative curricula leading to the degrees of Bachelor of Science in Pharmacy, Bachelor of Science in Respiratory Therapy, and Bachelor of Science in Toxicology, and to the Bachelor of Science degree with majors in medical laboratory science and health record administration. Associate degree programs are offered in medical laboratory science (MLT), respiratory therapy, and dental hygiene. In cooperation with the medical schools and teaching hospitals in the Boston area, the College offers a post-baccalaureate program for physician assistants. The College also offers the Open Option: common freshman-year health track available for undeclared majors.

University College University College, so called because it draws upon the resources of the other colleges of the University, offers part-time day and evening programs in arts and sciences, business administration, law enforcement, and health professions, leading to the Associate in Science, Bachelor of Arts, and Bachelor of Science degrees. It does not duplicate the offerings of the day colleges, but provides curricula that cut across traditional subject-matter areas to meet the particular needs of adult students. Students may pursue a degree or simply take courses based on needs and interests, up to a total of 18 quarter hours of credit per quarter. Courses are offered in Boston as well as Burlington, Belmont, Chelmsford, Framingham, Milford, Revere, Westwood, Weymouth, Brockton, Marshfield, Lynnfield, Marlboro, Dedham, and North Attleboro.

University College also offers two full-time day programs. The Radiologic Technology Program (28 months) and the Dental Assistant Program (1 year) are offered in cooperation with a variety of local clinical facilities. Each program has a sep-

arate application procedure and special requirements for admission. Students may enroll as degree candidates or elect single courses appropriate to their needs and interests. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and other off-campus locations near Boston.

Alternative Freshman-Year Program

The Alternative Freshman-Year Program is offered by Northeastern University through University College. It is designed for students who want to go to college but whose high school records do not reflect their true abilities. Because it is structured to assist students in making the academic and social adjustments necessary for success in college, this program is well suited to those who feel that their potential is not reflected by their high school records and/or believe that they are not ready to undertake a full college curriculum.

The Alternative Freshman-Year Program is specifically designed to help students strengthen their basic academic skills in writing as well as mathematics. While helping them gain confidence in their ability to do college-level work, the program also offers students an opportunity to sample different areas of study before committing themselves to a specific major. In conjunction with the prescribed curriculum, professional counselors work with each student to establish a program suited to his or her individual needs. These same counselors are normally available on a continuing basis throughout the student's entire freshman year.

Developed in collaboration with University College, a division of Northeastern serving students who seek a flexible college program, the Alternative Freshman-Year Program has a proven record of success in assisting students to develop their full potential. Freshmen entering Northeastern University through this program have regularly achieved sophomore status in eligible degree programs with about the same frequency as their freshman counterparts throughout the University.

Students who complete the program, achieving a cumulative quality-point average of 1.400 or better and completing specific program requirements as noted, may generally continue their degree programs within University College or transfer, with sophomore status, to the College of Business Administration, the College of Criminal Justice, the College of Pharmacy and Allied

Health Professions, Boston-Bouvé College of Human Development Professions, or the College of Arts and Sciences.

Graduate Schools

For more information about the graduate schools and their programs, contact the individual school.

Arts and Sciences The Master of Arts degree may be earned in Economics, English, History, Political Science, Psychology, Sociology, and Social Anthropology. The Master of Science degree is available in Biology; Chemistry; Clinical Chemistry; Forensic Chemistry; Economics Policy and Planning; Law, Policy, and Society; Mathematics; and Physics. The Master of Science in Health Science and the Master of Public Administration degrees are also offered. In addition, there is an advanced Literary Study Program leading to the Certificate of Advanced Graduate Study, and programs leading to the Doctor of Philosophy degree in Biology; Chemistry; Forensic Chemistry; Economics; Law, Policy, and Society; Mathematics; Physics; Psychology; and Sociology. Most programs may be completed through either full- or part-time study.

Boston-Bouvé College of Human Development Professions

The Master of Science degree may be earned, with specialization in Counseling Psychology, Physical Education, Physical Therapy, or Recreation and Leisure Studies. Graduate courses in Health Education are available as electives within the College and for special students. Programs may be completed through full- and part-time study.

The Master of Education degree may be earned with specialization in Career and Industrial Counseling, College Student Personnel Work and Counseling, Curriculum and Instruction, Educational Administration, Educational Research, Human Development, Rehabilitation and Special Education, School Counseling, and Speech-Language Pathology and Audiology. The Certificate of Advanced Graduate Study is offered in Counseling Psychology, Counselor Education, Educational Administration, and Rehabilitation Counseling. The Doctor of Education degree may be earned in Leadership: Administration and Supervision, with specialization in Counseling Psychology, Counselor Education, Educational Administration, or Rehabilitation Administration.

Business Administration A Master of Business Administration degree may be earned. The Graduate School of Business Administration offers a

variety of programs to meet the needs and schedules of graduate business students. Two full-time program alternatives are offered: a twenty-one month Management Intern Program, which includes a six-month, paid professional internship; and a two-year traditional full-time program, which may include administrative or teaching assistantship opportunities. Individuals who wish to continue their full-time job responsibilities while earning an M.B.A. degree may consider the evening part-time program of study, the eighteen-month Executive M.B.A. Program for upper-level managers, or the accelerated part-time High-Technology M.B.A. for qualified technical specialists.

The Master of Science degree in professional accounting is an intensive, full-time program specifically designed for liberal arts and other non-accounting majors.

In addition, there is a nondegree Program for Advanced Study in Business Administration leading to the Certificate of Advanced Study in Business Administration.

The Center for Management Development offers several intensive, graduate-level programs within the College of Business Administration. They are designed to provide professional growth and to improve the overall performance of experienced managers. Based on a modified Northeastern cooperative format, these programs permit company-sponsored participants to maintain their job responsibilities while attending classes. The Management Development Program spaces six weeks of in-residence instruction over four or five months, depending upon the choice of session. Sessions begin in October, January, and March on Phillips Academy campus in Andover, Massachusetts.

The Smaller Business Management Development Program is a three-week segmented program especially designed for smaller-business executives. The Program is held during February, March, and April on the campus of Phillips Exeter Academy in Exeter, New Hampshire.

The Center also sponsors Management Workshops, scheduled one day each week for ten or twelve weeks at an off-campus facility. The three specialized workshops focus on core functional areas, advanced management concepts, or management in high-technology organizations.

Criminal Justice The College of Criminal Justice offers both full- and part-time programs leading to a Master of Science degree in Criminal Justice and a Master of Science degree in Foren-

sic Chemistry. Students enrolled in the Master of Science program in Criminal Justice may choose from several areas of specialization: Administration and Planning, Criminology and Research, and Security Administration. The Master of Science program in Forensic Chemistry provides an integrated study of forensic chemistry as utilized in criminalistics laboratories and related professional fields. An interdisciplinary Ph.D. program in Forensic Chemistry is offered through the College of Arts and Sciences in conjunction with the College of Criminal Justice, with specialization in Forensic Materials Science or Forensic Analytical Chemistry. A further specialization in Forensic Toxicology is offered through the College of Pharmacy and Allied Health Professions in conjunction with the College of Criminal Justice. Students in either program attend classes during late afternoon and evening hours.

Engineering Master of Science degrees are offered with course specifications in the fields of Civil Engineering, Chemical Engineering, Electrical Engineering, Engineering Management, Industrial Engineering, Information Systems, Mechanical Engineering, and Transportation. A five-year program leading to both a bachelor's and master's degree is offered in Electrical Engineering and Mechanical Engineering, and a six-year program leading to both a bachelor's and master's degree is offered in Power Systems. Professional Engineers degrees are offered in Electrical, Industrial, and Mechanical Engineering. Ph.D. degrees are offered in Civil, Chemical, Electrical, and Mechanical Engineering. A Doctor of Engineering degree in Chemical Engineering is offered in addition to the Ph.D. A Women in Engineering program is also available.

Law The School of Law offers a full-time program of professional instruction leading to the degree of Juris Doctor (J.D.). The three-year curriculum includes twelve months of experience in law offices, governmental agencies, or other law-related employment. There are no courses for part-time or evening students.

Pharmacy and Allied Health Professions The Master of Science degree is offered in Biomedical Science, Clinical Chemistry, Hospital Pharmacy, Medical Laboratory Science, Medicinal Chemistry, and Pharmacology. The Ph.D. degree is offered in Biomedical Science with specialization in Medical Laboratory Science, Medicinal Chemistry, Pharmaceutical Science, Pharmacology, or Toxicology. An interdisciplinary doctoral degree

is available in Forensic Chemistry as well as a graduate program in Clinical Pharmacy, leading to the degree Doctor of Pharmacy (Pharm. D.).

Professional Accounting The Graduate School of Professional Accounting is designed specifically for Arts and Sciences majors. The distinctive feature of the fifteen-month, full-time Master of Science degree program is a three-month paid internship with a public accounting firm.

Insurance Institute

The Insurance Institute is sponsored by local insurance organizations and companies. It offers a number of noncredit courses in preparation for the Chartered Life Underwriter and Chartered Property-Casualty Underwriter designations as well as for the General Insurance, Insurance Adjuster, and Risk Management certificates.

Center for Continuing Education

The Center for Continuing Education was established to connect the University with various educational needs of its urban community. Its purpose is to assist both individuals and organizations who wish to keep pace with a society in the process of accelerated social and economic change. The Center offers a wide range of workshops, conferences, institutes, forums, and special training programs in areas that include business, health, engineering, graphic arts, nursing, and food service. For more information, please write or call the Northeastern University Center for Continuing Education, 370 Common Street, Dedham, Massachusetts, 02026; telephone 617-329-8000.

Research

Research, whether performed in the laboratory, the library, or in the field, is vital to a college education. It stimulates all participants and ensures a thriving academic atmosphere. Through research, faculty members, as well as students, stay abreast of the most recent developments in their particular fields. Faculty who disseminate this knowledge, through publishing, speaking, and teaching, help ensure a university education of the first order.

At Northeastern, research and scholarly endeavors are taken very seriously and are actively encouraged. Each year the faculty receive funding for an ever-increasing number of research projects. Sponsorship comes from a variety of sources. Federal agencies, private industry and

foundations, and the University itself all contribute to Northeastern's growing research emphasis.

While much of this research is carried out by the faculty members, their graduate students, and post-doctoral research associates, ample opportunities also exist for undergraduate students. Research participation can take place as part of regular academic programs, as specially designed independent studies, or through cooperative work assignments. Research activities are encouraged and are limited only by the student's own motivation and curiosity.

Northeastern University has numerous distinguished faculty members, many of whom have received prestigious awards, including Sloan Scholarships, Guggenheim Fellowships, and National Institutes of Health Research Awards. Faculty members lecture the world over—from just across the Charles River in Cambridge to clear across the Pacific Ocean in Sydney, Australia.

Additionally, many faculty serve as United States government consultants and participate on a variety of national and international committees. But, because Northeastern considers education its primary mission, students will always find an enthusiastic and accessible faculty to answer questions, solve problems, and stimulate enquiring minds.

Current research spans almost every academic and professional field and is not limited to laboratory investigations or the "hard" sciences. Every department of every college at Northeastern carries out some basic or applied research projects.

A brief summary of some of the topics presently under investigation by the faculty and students follows. Perhaps something here will spark hidden interests that students never realized they had. Students desiring to explore the opportunities for research participation should inquire at the appropriate department offices.

In the *College of Arts and Sciences* research projects reflect the diversity of its eighteen departments. Research in the humanities and natural and social sciences includes studies in nineteenth-century Boston architecture, the Off-Off Broadway theater, biochemistry, quantum field theory, and infrared spectroscopy.

As part of the College's interdisciplinary interest in marine sciences, the Marine Science and Maritime Studies Center has been established. At its Nahant field station and laboratory, faculty and graduate students carry on research in marine chemistry, biology, and botany.

Research in the *College of Engineering* encompasses some of today's most important techno-

logical subjects. Robotics, telecommunications, signal processing, and the theoretical aspects of computer engineering graphics are some of the major fields of interest within the College. But not all studies are high-technology oriented. Indeed, some faculty pursue projects dealing with the electrical properties of human blood vessels, while others investigate the mechanical characteristics of cement. These seemingly diverse research areas do have one thing in common, however; they deal with the improvement of our quality of life.

Northeastern University's new *College of Computer Science* represents one of today's most active technological fields. The research interests of the computer science faculty span network control algorithms, numerical applications, interactive graphics development, design of data base systems, artificial intelligence, and the software aspects of VLSI design systems.

The *College of Criminal Justice* is one of the few institutions of its kind in the United States to study crime and law in an interdisciplinary fashion. Lawyers, social and forensic scientists, and system specialists are encouraged by the College to participate in research activities focusing on both crime detection and prevention. Some research directions currently pursued by faculty include industrial espionage, private security systems, and contemporary terrorism.

The *School of Law's* research activities concentrate on the legal system from a perspective encompassing the past, present, and future. Topics include a historical look at the Securities and Exchange Commission, a present view of new civil procedures, and the ramifications of a landmark court case on the mental health profession. Law school curricula also come under investigative scrutiny.

The nature of research in *Boston-Bouvé College of Human Development Professions* is broad in range and diverse in approach. Changes in human development and the roles of the teacher and clinician in facilitating such changes are topics of lively interest. Some of the current research interests of the College include the communication abilities in normal and hearing-impaired individuals, the role of exercise in cardiovascular health and disease, the relation between age, change and the development of motor and cognitive skills in children, the evaluation of clinical practice in physical therapy and educational practices in the schools, and the examination of barriers to the employment of the disabled in leisure services.

The *School of Nursing*, through its research activities, addresses some of the important problems currently facing the entire nursing profession. One answer to nursing "burnout" may be found in the School's new school nurse practitioner program. Assessments of this new direction in nursing and other employment possibilities and problems are areas in which the faculty is directing its research efforts.

Research objectives in the *College of Pharmacy and Allied Health Professions* have important ramifications for everyone's better health. Studies include investigating new ways to analyze antidepressant and anticonvulsant drugs, improving methods to diagnose bladder cancer, and studying clinical applications in respiratory therapy. The National Institutes of Health, Dow Chemical Company, and the American Heart Association sponsor some of this work.

Research within the *College of Business Administration* divides itself between the theoretical and practical aspects of management, human resources, and marketing. New ideas in corporate practice and academic theory are being realized through conclusions reached by a faculty examining such topics as high-technology management, small-business entrepreneurship, and foreign investment in developing countries. Other studies concentrate on transportation problems in the U.S., government regulation in industry, and technological forecasting in high-technology firms.

Northeastern University is its own research subject for the *Cooperative Education Research Center*. Through an annual census and other statistical surveys, data on cooperative education are compiled. Because Northeastern University is a major force in cooperative education in this country, it seems only appropriate that this information clearinghouse and research facility should be located here. Conclusions reached may affect your own education, since they cover cooperative education's impact on college costs, career opportunities, and life satisfaction.

Northeastern also has several interdisciplinary centers and institutes that do not grant degrees, but perform research in a variety of specialized areas.

The *Barnett Institute of Chemical Analysis and Materials Science* has as its goal basic research in the fields of analytical chemistry and material science and its application to problems of social relevance. The Institute has developed an international reputation in the fields of chromatogra-

phy, mass spectrometry, amorphous metals, and solar energy storage devices.

The *Center for Electron Microscopy* is a self-contained research unit that utilizes the latest scientific equipment for training and research into cellular and subcellular structures.

The *Center for Applied Social Research* is a University-wide institute that deals with issues of public policy and social research. Projects are currently underway in the fields of criminal justice, public safety, mental health, social welfare, and education.

Support services for research are provided by the University's *Office of Sponsored Programs*, the *Academic Computer Services*, and the *Division of Laboratory Animal Medicine*.



Buildings and Facilities

In 1910, Northeastern University began new construction of the first piece of property acquired at its present site on 360 Huntington Avenue. Since those early days, the central Boston Campus has grown to occupy over fifty acres of land located in close proximity to such cultural landmarks as Symphony Hall, the Museum of Fine Arts, the Isabella Stewart Gardner Museum, Horticultural Hall, and the Boston Public Library. The University is within walking distance of the Fenway, a large park that includes a beautiful rose garden and extensive jogging paths. Copley Place, the Back Bay shopping district, and a number of renowned hospitals, including Brigham and Harvard teaching hospitals, are also minutes away.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, bus terminals serving inter- and intra-state lines, and MBTA subway-bus service within the metropolitan-suburban area. There is a subway stop directly in front of the campus. For motorists coming from the west, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section. From the north, motorists may take Routes 93 or 95 to the Southeast Expressway (Route 3) to Massachusetts Avenue, which intersects Huntington Avenue. Visitors driving from the south should take the Southeast Expressway and the Massachusetts Avenue exit.

The Boston Campus is divided by Huntington Avenue, with academic and administrative buildings on one side and most dormitories on the other. Many of the educational buildings are interconnected by underground passageways, which are especially convenient during inclement weather.

In addition to several off-campus athletic facilities and University College's fifteen branch locations, Northeastern University maintains a variety of affiliations that provide its students access to specialized equipment and facilities at other institutions and organizations.

Carl S. Eli Student Center

The Carl S. Eli Student Center provides facilities for student recreation and extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the Center. Also

included are special drama facilities, a ballroom, a main lounge, a fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000 persons.

The University Library

The University Library System includes the Dodge Library and the three graduate libraries: Chemistry, 112 Hurtig Hall, which includes Chemical Engineering, Biology, Pharmacy, and the Health Sciences; Physics/Electrical Engineering, 324 Dana Hall; and Mathematics/Psychology, 531 Nightingale Hall. The Suburban Campus Library supports the programs at Burlington and Dedham. Other collections are at the Marine Science and Maritime Studies Center in Nahant, at the Dedham campus, and at the Center for Management Development in Andover. There is also the Law Library located in the Knowles Center.

The University Library collections consist of over 505,000 bound volumes and 555,000 microform volumes. The periodical titles number 4,000, additional continuation titles 1,243, and sound recordings 10,000.

1. The Reference Collection in the Cabot Reading Room on the main floor of the Dodge Library contains 20,000 volumes. This collection is of major importance to anyone using the Library. The researcher should be aware of the source books, handbooks, bibliographies, etc., before beginning an investigation of the literature.

The Reference Division includes the Government Documents Collection, located in 14 Dodge, and the Microforms Collection, located in 108 Dodge. Additional sources of information are the Business Services, Technical Reports, Annual/Company Reports, and the Information File for pamphlet materials.

2. The Periodical Collection in the Webster Reading Room on the main floor consists of Indexing and Abstracting Services and the current periodicals, mainly in literature, humanities, social sciences, and general science, as well as foreign and domestic newspapers.

This collection supports the Reference Collection and brings up to date the General Collection by encompassing the latest developments in all fields of knowledge.

The Periodical Stacks are adjacent to the collection and are serviced by the library staff.

3. The General Collection is located on the three floors and two stack levels of the Dodge Library, indicated by posted floor plans and guides available at the Information Desk.

4. The Reserve Book Collection is located in 204 Dodge. This collection of textbooks and assigned reading supports classroom lectures and laboratories as well as providing additional in-depth information.

5. The Public Catalog, located on the main floor, includes author, title, and subject cards for the foregoing collections, except for documents, technical reports, and complete entries for periodicals, which will be found in catalogs in those areas. The Public Catalog includes both the Dewey Decimal classification and the Library of Congress classification.

6. The Circulation Department manages the organization of the General Collection. Materials are charged out and returned at the Circulation Desk. A daily computer printout of items on loan is available to assist in locating books not found on the shelves.

7. The Inter-Library Loan Department is located in 18 Dodge. This service should be used for materials not available in the system and for serious research.

8. The Music Reference Service is located in 401 Dodge. This collection of books, scores, records, and tape cassettes is for assigned listening and personal enjoyment. The collection contains both music and spoken word.

9. The Learning Resources Center, 406 Dodge, is a service for programmed and language instruction utilizing audio/visual/video equipment teaching programs to support classroom work and independent study.

10. The Divisional Libraries, the Burlington and Dedham Campus Libraries, and the Law School Library have the same services and card catalogs to support those disciplines.

Library Hours

Dodge Library	
Monday–Thursday	7:45 a.m. to 10:00 p.m. (10:00 p.m. to midnight)*
Friday	7:45 a.m. to 7:30 p.m.
Saturday	12:00 noon to 4:00 p.m. (4:00 p.m. to 10:00 p.m.)*
Sunday	12:00 noon to 4:00 p.m. (4:00 p.m. to midnight)*

*Reading rooms are open without service.

Divisional Libraries	
Monday–Thursday	8:30 a.m. to 10:00 p.m.
Friday	8:30 a.m. to 7:30 p.m.
Saturday–Sunday	Closed

Suburban Campus Libraries***Burlington:***

Monday–Thursday	8:30 a.m. to 9:00 p.m.
Friday	8:30 a.m. to 5:00 p.m.
Saturday	8:30 a.m. to 1:00 p.m.
Sunday	Closed

Dedham:

Monday–Thursday	9:00 a.m. to 9:00 p.m.
Friday	9:00 a.m. to 5:00 p.m.
Saturday–Sunday	Closed

Office of Learning Resources

The primary objective of the Office of Learning Resources is to help support the instructional and communications needs of the University. A variety of services is available to students and faculty.

The Learning Resources Center furnishes students with tutoring services and individualized study facilities in support of regular course requirements, as well as supplemental instruction in many subject areas. Study materials here are presented in varied formats, including programmed texts, audiotapes, videotapes, sound filmstrips or slides, computer-assisted lessons and exercises, and related workbooks. The facility is located in 406 Dodge Library. The hours are 8:00 a.m. to 8:00 p.m. Monday through Thursday, 8:00 a.m. to 7:00 p.m. Friday, and 1:00 p.m. to 5:00 p.m. Saturday and Sunday.

Instructional Materials Services, 416 Dodge Library, acquires and maintains the collection of Northeastern-owned instructional materials and provides a rental service for 16mm. films and videotapes obtained from outside sources.

Campus Media Services makes available, on a prescheduled basis, all types of audiovisual and video equipment and instructional materials for the support of classroom instruction. Items include films, filmstrips, slides, opaque and overhead projectors, audio and videotape recorders, TV cameras and monitors, portable public address systems, telelecture equipment, record players, and projection screens. This office is located in Room 2 of the Ell Building.

Media Production Services, located in 413 Dodge Library, coordinates and provides professional consultation and specialized services in graphics, photography, audio recording, television, and multimedia production for various University needs.

Visitor Information Center

The Visitor Information Center, located in 115 Richards Hall, provides general information and assistance to students and faculty as well as to

visitors to the University. The Center's staff is prepared to answer questions, give directions, provide telephone numbers, and distribute publications related to the University's departments, functions, and services. The Center also provides the services of a public notary and a twenty-four-hour recorded "events" telephone line, 617-437-3281. Open Monday through Friday from 8:00 a.m. to 8:30 p.m., the Center also offers its services over the telephone. Please call 617-437-2736.

Counseling and Testing Center

Counseling and testing to aid a student or prospective student with career, educational, or personal concerns are available days and certain weekday evenings until 8:30 p.m. Information and appointments may be obtained by calling 617-437-2142 or by visiting the Counseling and Testing Center, 302 Ell Building.

Academic Computer Services

Academic Computer Services offer students and faculty access to DEC VAX 11/780 computers in a time-sharing environment through video and hard-copy terminals arranged in student and faculty clusters at the Boston, Burlington, and Dedham campuses. For information on available hours, please call 617-437-2335.

Office of Services for the Handicapped

Students with special needs can receive assistance by visiting or calling the Office of Services for the Handicapped (OSH). The office is open most evenings until 10:00 p.m. Services provided include sign language interpreters, readers, HP parking and alternative testing. For further information, call 617-437-2675 (voice) or 617-437-2730 (TTY). The office is in Room 4 Ell Building.

Cabot Physical Education Center

The Godfrey Lowell Cabot Physical Education Center contains four basketball courts, an athletic cage, a small gymnasium, and administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouvé College of Human Development Professions.

The Barletta Natatorium houses a 105-foot swimming pool, a practice tank for the crew, handball/racquetball courts, and shower and dressing facilities.

Dockser Hall

Charles and Estelle Dockser Hall houses a large gymnasium, dance studio, motor performance laboratory, community recreation laboratory, folk

arts center, dark room, recreation resources area, locker rooms, offices, classrooms, conference room and lounge, storage facilities, and a cardiovascular health and exercise laboratory.

Dedham Campus

One of Northeastern's most recent acquisitions is the twenty-acre Dedham Campus on Route 135 just north of Route 128. This recently renovated facility contains several classrooms, two executive case-study rooms, a dining area, and a computer room. There are also a library and a number of seminar rooms used by a new High-Technology MBA program and University College's Center for Continuing Education.

Suburban Campus

The Burlington Campus of Northeastern University was established in 1964 because businesses and industries in the Route 128 area expressed a need for educational programs that their employees could utilize. The campus is located near the junction of Routes 128 and 3 in Burlington, Massachusetts.

The diversity of programs offered at Burlington encompasses undergraduate, graduate, and continuing education courses. Full- and part-time degree programs, as well as nondegree certificate programs, are available.

Henderson House

The University's conference center, Henderson House, is located in Weston, Massachusetts, twelve miles from the Boston Campus. Henderson House provides a gracious setting for both large and small conferences and meetings, and its facilities include a dining service and some overnight accommodations. For more information about Henderson House, please telephone 617-329-8000, ext. 13.

Warren Center

The Warren Center is located on 165 acres in Ashland, Massachusetts, thirty miles west of Boston. Although it serves as a practical laboratory for students in Boston-Bouvé College of Human Development Professions, the Warren Center invites Northeastern's staff, faculty, alumni, and students to use its facilities and welcomes other educational groups seeking enrichment in an outdoor setting. Woods, fields, streams, winterized cottages, and Hayden Lodge provide year-round opportunities for outdoor learning. The Center also has an archery range, an outdoor pavilion, heated cabins, a health lodge, and conference accommodations.

Marine Science and Maritime Studies Center

The Marine Science and Maritime Studies Center, located in Nahant, Massachusetts, is a research and instructional facility primarily engaged in the study of marine biology and oceanography. Many of the courses at the Institute are applicable toward an advanced degree in biology or health science. The Institute, located about twenty miles northeast of Boston, is in operation all year.

The George and Hope Matthews Arena

Two blocks and a right turn from the main quadrangle of Northeastern University's Boston Campus is the oldest indoor ice hockey arena in the United States and one of the focal points for amateur athletics in the Boston area. The building is used primarily for collegiate sports, especially men's and women's basketball and hockey contests, and for recreational activities. Northeastern also makes the Arena available to the community for certain events.

Network Northeastern (NNU)

Network Northeastern represents the University's entry into the age of education by telecommunications. The Network's main mode of operation utilizes the microwave-based Instructional Television Fixed Service (ITFS) system whereby educational services are delivered directly to company sites and other remote locations within a 30-mile radius of Northeastern's Boston campus. With this service, live classroom instruction is telecast in color to remote sites, where it is viewed in reception rooms equipped with TV monitors and a telephone-based talkback system. During presentations, off-campus students are able to participate in the instruction as fully as students on campus. A courier service will collect and deliver homework assignments and will serve as the off-campus student's link to the bookstore, registrar, and other campus services.

In its first year of operation, Network Northeastern offers engineering technology courses and graduate courses in engineering. These offerings will be expanded in the near future to include courses in state-of-the-art engineering topics, management, mathematics, technical writing, and computer science.

University College

John W. Jordan, Dean

Robert W. O'Connor, Associate Dean for
Academic Programs

Ralph T. Vernile, Jr., Associate Dean for
Administration

The Programs

University College is committed to the education of mature adult students who wish to live effectively in today's complex society. The programs in the College are specifically designed to satisfy the changing professional, cultural, and social needs and interests of adults. They are constantly evaluated, and redesigned when necessary, to keep pace with students and community.

Degree programs have been developed in 33 major fields of study in the areas of business administration, arts and sciences, law enforcement, and health professions. Courses are offered on a part-time basis Monday through Saturday during day and evening hours convenient for adults. Students may elect single courses, pursue a certificate program, or enroll in full-degree programs leading to the Associate in Science or the Bachelor's degree. Short-term seminars are also offered for credit. Classes are scheduled in several locations that are accessible to the urban and the suburban community.

University College also offers two full-time day programs. The Radiologic (X-Ray) Technology Program (29 months) and the Dental Assistant Program (one year) are offered in cooperation with a variety of local clinical facilities. Each program has a separate application procedure and special requirements for admission.

The Faculty

Approximately 1,250 men and women compose the part-time teaching staff of University College. Included are members of the full-time faculty of Northeastern University and other educational institutions in New England, as well as outstanding New England business and professional leaders with training and experience in specialized areas. The faculty are selected because they are highly successful in their fields and are well qualified to provide sound methods of teaching for adults in an interesting, inspiring, and effective manner.

The Student Body

The student body of University College represents the diversity of interests that is one of the basic strengths in adult education. Approximately 16,000 students range in age from 18 years to beyond retirement. Some enroll immediately after high school graduation. Others may have graduated several years ago.

University College students can have full-time commitments to their jobs, families, or other responsibilities. They may enroll in a single course or in a full-degree curriculum, depending on whether their goals are career related or for personal enrichment.

University College Administrative Officers

John W. Jordan, B.S., M.Ed., *Dean of University College*

Elaine R. Bauer, B.A., Ed.M., *Assistant Director, Academic and Student Affairs*

Stanley A. Bozen, A.R.R.T., *Director of the Radiologic Technology Program*

Richard J. Comings, A.B., M.A., M.P.A., *Assistant Dean and Director of Special Programs*

Edward J. Czarnowski, B.S., Ed.M., C.L.U., *Assistant Dean and Director of Insurance Institute*

Marcia C. DePace, R.N., M.S., *Academic Coordinator, Nursing*

Janet Fisher Doyle, B.A., M.Ed., *Assistant Director, University College Placement*

Michael S. Dvorchak, B.A., M.A., *Associate Dean and Director of Suburban Campus*

William T. Edgett, A.B., M.A., *Assistant Dean and Assistant Director, Academic and Student Affairs*

Audrey G. Emmer, B.S., M.Ed., *Assistant to the Director, Business Administration Programs*

Carol L. Fulton, B.A., B.S., *Assistant Director, Academic and Student Affairs*

Kathleen H. Hayes, A.B., Ed.M., *Director of Adult and Special Programs, Office of Career Development and Placement*

David R. Kane, B.S., *Registrar for Part-time Division*

Holly W. Matisis, B.A., *Administrative Assistant, Academic and Student Affairs*

John J. McKenna, B.S., M.A., *Assistant Director, Administrative Services*

Lana B. Melnik, B.S., *Administrative Assistant, Health Professions Programs*

Robert W. O'Connor, A.B., Ed.M., Ed.D., *Associate Dean for Academic Programs*

Dorothy M. Oppenheim, B.A., M.B.A., *Assistant Dean and Director of Business Administration Programs*

Ann B. Pappas, B.S., *Assistant Director for Office Services*

Marie T. Pellegriti, B.S., *Assistant Registrar*

Jacqueline Platt, B.S., M.Ed., *Assistant Director, Suburban Campus, and Director of Counseling, Burlington*

John H. Robbins, Jr., B.A., M.Ed., *Associate Dean, Director, Center for Continuing Education*

Kenneth C. Solano, A.B., M.Ed., *Associate Dean, Associate Director, Center for Continuing Education*

Deborah A. Starr, B.A., *Publications Coordinator*

Gretchen M. Thompson, B.A., M.Ed., *Director, Academic and Student Affairs*

Ralph T. Vernile, Jr., B.S., *Associate Dean for Administration*

Paula M. Vosburgh, B.S., M.S., *Director, Science and Health Professions Programs*

Marilyn S. Wiener, A.B., M.A., *Associate Dean and Director of Humanities and Social Science Programs*

Richard L. Wilson, B.A., B.S., M.Div., Ed.M., *Coordinator, Alternative Freshman-Year Program*

Executive Committee

John W. Jordan, Chairperson
 Richard J. Comings
 Robert W. O'Connor
 Dorothy M. Oppenheim
 John H. Robbins, Jr.
 Gretchen M. Thompson
 Ralph T. Vernile, Jr.
 Paula M. Vosburgh
 Marilyn S. Wiener

Committee on Academic Standing

William T. Edgett, Chairperson
 Robert W. O'Connor
 Dorothy M. Oppenheim
 Gretchen M. Thompson
 Paula M. Vosburgh
 Marilyn S. Wiener
 John W. Jordan, *Ex Officio*

Law Enforcement Curriculum Committee

Richard D. DeBoer, Jr.
 Francis R. Hankard
 Robert F. Johnson
 Joseph M. Jordan
 Robert W. O'Connor
 Howard R. Palmer
 Carmen S. Pizzuto
 Daniel A. Welch
 Three Student Representatives
 John W. Jordan, *Ex Officio*

Social Sciences and Humanities Curriculum Committee

Marilyn S. Wiener, Chairperson
 Samuel S. Bishop
 Robert L. Cord
 Neil F. Duane
 Larue W. Gilleland
 Harold M. Goldstein
 Edward A. Hacker
 Wilfred Holton
 Joshua R. Jacobson
 Charles Karis
 Marvin X. Lesser
 Robert W. O'Connor
 Holbrook C. Robinson
 Raymond H. Robinson
 Sergei P. Tschernisch
 Michael L. Woodnick
 Two Student Representatives
 Two Part-Time Faculty Representatives
 John W. Jordan, *Ex Officio*

Library Committee

Richard J. Comings, Chairperson
 Marvin X. Lesser
 Robert W. O'Connor
 Dorothy M. Oppenheim
 John W. Jordan, *Ex Officio*

Science Programs Curriculum Committee

Paula M. Vosburgh, Chairperson
 Philip W. Lequesne
 Robert W. O'Connor
 Fred A. Rosenberg
 David L. Wilmarth
 One Student Representative
 One Part-Time Faculty Representative
 John W. Jordan, *Ex Officio*

Health Professions Curriculum Committee

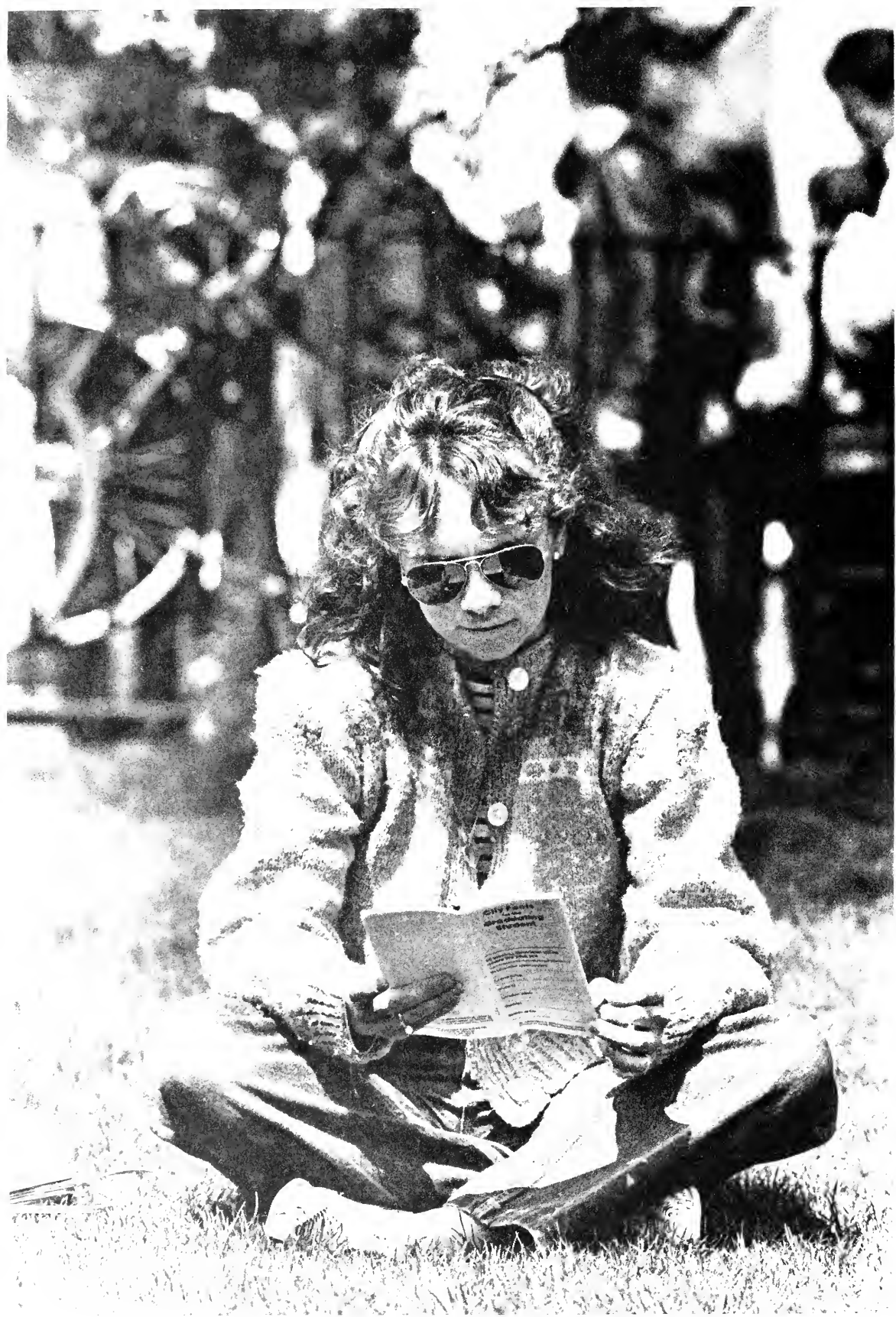
Paula M. Vosburgh, Chairperson
 Theodore Blank
 Stanley A. Bozen
 Annalee Collins
 Gerald L. Davis
 Robert W. O'Connor
 Judith Weilerstein
 Two Student Representatives
 Two Faculty Representatives
 John W. Jordan, *Ex Officio*

Therapeutic Recreation Curriculum Committee

Paula M. Vosburgh, Chairperson
 Jacalyn S. Hamada
 Robert W. O'Connor
 Frank M. Robinson, Jr.
 Two Student Representatives
 John W. Jordan, *Ex Officio*

Business Administration Curriculum Committee

Dorothy M. Oppenheim, Chairperson
 W. Arthur Gagne
 Victor B. Godin
 Paul A. Janell
 Robert W. O'Connor
 Joel M. Rosenfeld
 Jonathan B. Welch
 Two Student Representatives
 John W. Jordan, *Ex Officio*



Office of Academic and Student Affairs

Gretchen M. Thompson, Director, Academic and Student Affairs
 Elaine M. Bauer, Career Counselor, Assistant Director
 William T. Edgett, Academic Adviser, Assistant Director
 Carol L. Fulton, Academic Adviser, Assistant Director
 Jacqueline Platt, Academic Adviser, Assistant Director, Burlington Campus
 Richard L. Wilson, Academic Adviser, Assistant Director

Kathleen H. Hayes, Director, Adult and Special Programs
 Janet F. Doyle, Assistant Director

Academic Policies

Admission and Registration
 Matriculation: Becoming a Degree Candidate
 Graduation Requirements
 Transfer Credit Policy
 Grading System
 Attendance, Homework, and Examinations
 Miscellaneous Policies

See pages 18–25 for further information.
 Telephone: 617-437-2400

Career and Academic Counseling Services

New Student Open Houses
 Academic Advisers
 Tutorial Services
 Career Counseling
 Self-Assessment and Career Development
 Job-Search Seminars
 Cooperative Education
 Core Career Courses for Women
 Counseling and Testing Services
 Placement

See pages 26–28 for further information.
 Telephone: 617-437-2400

Academic Policies

Admission and Registration

Open Admission University College has an open admission policy. This policy allows students to enroll in most courses simply by registering for the course. It is not necessary to submit a formal application for admission, nor are entrance examinations or College Board Examination scores required.

The open admission policy applies equally to nondegree students and to those who intend to obtain an undergraduate degree at University College. Many students enroll in courses at the College for personal enrichment or to gain specific career-related skills. Credits earned for these courses may be applied to a degree program if the student desires to pursue a degree at a later time. In some cases, nondegree students already have an undergraduate degree and are interested in specific courses for their continuing education. Nondegree students are considered members of the University College community and are entitled to the student support services offered by the College. Students who decide to pursue a degree program at University College will eventually need to become matriculated into the College. See page 19 for further information about the matriculation process. Special matriculation requirements apply to students entering the Bachelor of Science in Business Administration degree program. For detailed information about the matriculation process for this program, please see pages 39–41.

Registration Students may register for courses by reporting to any of the College's fifteen campuses during the registration periods that are scheduled each quarter. It is not necessary to register at the campus where a particular course actually meets; students may register at any campus for a course scheduled at any other campus. All students must complete a registration form before attending class; attendance at class, even with the instructor's permission, does not constitute registration. No academic credit will be awarded to students who are not properly registered. See the Academic Calendar on pages vi–viii for a complete registration schedule.

Not all the courses listed in this *Bulletin* are offered each quarter. A complete list of the

courses offered in any particular quarter is contained in the University College *Schedule Guide* for that quarter. A *Schedule Guide* is distributed for the Fall, Winter, Spring, and Summer quarters at all campuses or by mail upon request (telephone 617-437-2400).

Quarter-Hour Credit Northeastern University operates on a quarter-hour credit system. A quarter-hour credit is the equivalent of three-quarters of a semester hour. Students wishing to take courses at Northeastern and to transfer these credits to another school are urged to receive permission from their adviser.

Help with Course Selection Academic advisers (see page 26) are available throughout the year by appointment to help students plan their academic programs and select courses. Students who have earned credits from other schools are urged to have their transcripts evaluated prior to the registration period to avoid registering for courses that duplicate work completed at other educational institutions. Advisers are also available without appointment to answer general questions during the official registration periods at all campuses.

Before registering for a course, students should read the course description in this *Bulletin* to determine if it is necessary to have taken a prior or prerequisite course. In order to ensure academic success, students are strongly advised to adhere to course prerequisites.

Placement Tests Students registering for mathematics courses offered by Lincoln College must take a mathematics placement test given during registration. Students registering for Mathematics 1 (MTH 4110) must take a placement test on the first night of class. Some students may be requested to register for Basic Mathematics 1 (MTH 4001), a three-quarter-hour course offering additional preparation in math. Students registering for College Algebra 1 (MTH 4107), however, must have taken the placement test during registration to be admitted to class. Students who have taken introductory Mathematics courses MTH 4081 and MTH 4082, or MTH 4001 and MTH 4002, must have evidence of successful completion to register.

Students enrolling in ENG 4110 English 1, ENG 4380 Business Writing and Reports 1, and TCC 4101 Technical Writing 1 will be asked to complete a brief writing sample at their first class meeting. Based on this sample, their instructor may refer them to a more basic course in English composition, such as ENG 4011 Elements of Writing or ENG 4005 English for International Students 1.

International Students Northeastern University is authorized under Federal law to enroll nonimmigrant alien students. For information regarding eligibility to enroll in University College, contact Carol Fulton in 102 Churchill Hall, telephone 617-437-2400, or the International Student Office in 270 Holmes Hall, telephone 617-437-2310.

Maximum Course Load New students may elect up to 12 quarter hours per quarter without special permission from the appropriate Program Director. Former students who are not on the Dean's List may also elect up to 12 quarter hours per quarter without special permission. Students who are on the Dean's List may elect a maximum of eighteen quarter hours per quarter without special permission.

Class Changes University College reserves the right to cancel, divide, or combine classes when necessary. While this policy ensures that students will almost never be excluded from a class because it is oversubscribed, it also means that a course may occasionally be canceled because of inadequate enrollments. Cancellations are more likely to occur among upper-level or advanced courses than among introductory courses. To avoid course cancellations, students are urged to register early.

Pass/Fail Courses Students may register for one *elective* course per quarter on a pass/fail basis. To be eligible for pass/fail status in a course, the student must be in good academic standing (not on academic probation) and must have completed thirty-nine quarter hours of academic work. Thereafter, the student may register for one pass/fail course for each fifteen quarter hours of successfully completed work. The student must also meet all prerequisites for the courses.

To be graded on the basis of pass/fail, the student must obtain a Pass/Fail Permission Card signed by the Program Director for his/her program of study. This card must then be brought to the instructor of the course. In addition, the Registrar

must be notified in writing by the student of the student's intention to take the course on a pass/fail basis prior to the fourth meeting of the course.

Auditing Policy Students are permitted to audit courses, but they must complete the usual registration forms and pay regular tuition fees. There is no reduction in fees for auditing. An auditor may participate in class discussion, complete papers and projects, and take tests and examinations for informal evaluation. However, regardless of the amount or quality of work completed, **no academic credit will be granted at any time for audited courses.**

The student's decision to audit a course must be communicated in writing to the Registrar prior to the fourth meeting of the course. No exception to this procedure can be approved without authorization by the Academic Standing Committee of the College.

Withdrawal Policy A student who wishes to withdraw from a course must complete a Course Drop form in the Registrar's Office or notify the Registrar in writing of his or her intention to withdraw prior to the week in which final examinations are given. The forms are available at all campus locations. If, after the first class meeting, a student misses three consecutive class meetings of a course, he or she will automatically be withdrawn from the course by the Registrar. If, by the ninth or tenth week of the quarter, the Registrar examines the attendance book and has every reason to believe that the student has dropped the course, the student will be officially withdrawn, and his or her withdrawal will be noted in the attendance book.

Students who withdraw or are withdrawn from a course will have no record of the withdrawal on their transcripts. (See page 29 for information on tuition refunds.)

Matriculation—Becoming a Degree Candidate

Matriculation, the process of declaring a major and thereby becoming a degree candidate, is mandatory for all students intending to pursue a degree program at University College. The procedure for matriculating is initiated by filing a Petition for Matriculation with the Office of Academic and Student Affairs or at any branch campus office. For more information or to request a petition, call 617-437-2400; the completed form may be returned by mail to the Office of Academic and Student Affairs, 102 Churchill Hall,

Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115. Students interested in pursuing the Bachelor of Science in Business Administration degree must meet additional requirements prior to becoming a degree candidate in this program. (See page 41.)

To be eligible for matriculation, a student must complete at least eighteen hours of credit at University College, including the satisfactory completion of English 1, 2, 3 (ENG 4101, ENG 4102, ENG 4103) or their equivalent. The student must be a graduate of a regionally accredited high school or secondary school (an institution having recognition and membership in one of the six regional accrediting associations recognized by the Council on Post-secondary Accreditation) or possess a High School Equivalency Certificate. The student must have a residence quality point average of at least 2.0 (a C average at University College) and must maintain this minimum quality point average to continue as a matriculated student.

Matriculation Requirements for Transfer Students

A student who has petitioned to transfer credits from another regionally accredited institution of higher education (an institution having recognition and membership in one of the six regional accrediting associations recognized by the Council on Post-secondary Accreditation) or from other sources such as CLEP or PEP examinations (see page 23) may matriculate after completion of one quarter in University College, provided a total of 18 hours of credit have been completed from all sources. (See page 21 for procedures for transferring credit from another institution.) The English 1, 2, 3 (ENG 4101, ENG 4102, ENG 4103) requirement or the equivalent must be satisfied as well as high school or secondary school graduation or possession of a High School Equivalency Certificate. The student must have a residence quality point average of at least 2.0 (a C average in University College) and must maintain this minimum quality point average to continue in a matriculated status.

Transfer students who wish to pursue a Bachelor of Science in Business Administration degree should check page 41 for additional requirements.

Graduation Requirements

Except for certain Health Professions Programs, the requirement for graduation from University

College is 174 quarter hours for a bachelor's degree and 96 quarter hours for an associate's degree, with attainment of a quality point average of 2.0 (an average grade of C). Although the credits allowed for acceptable work completed elsewhere by transfer students count toward fulfillment of quantitative graduation requirements, neither the credits nor the grades earned in such courses are included in the quality point computations for graduation. Course requirements for each degree are different and are outlined in this *Bulletin*.

Course Substitutions and Waivers Students may request to have a required course in an academic program waived and to substitute another course in place of the required course. Such requests are not encouraged, although the University recognizes that students may occasionally have very good reasons for requesting such waivers. To request that a required course be waived, students must complete a Petition for Course Substitutions and Waivers and submit the petition to the Office of Academic and Student Affairs. Course petition forms are available in 102 Churchill Hall and at all branch campus locations. All petitions for course substitutions and waivers are routinely forwarded to the Director of the academic program in which the student is matriculated. The Program Director in turn makes a recommendation concerning the request for the waiver to the University College Committee on Academic Standing. All required course substitutions and waivers of program requirements must be approved by the Committee on Academic Standing.

Graduation with Honor Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or with highest honor. To be considered for graduation with honor, a student must have completed a minimum of 72 quarter hours of work at University College. Courses transferred from other educational institutions will not be considered in determining honor graduates.

Residence Requirement Every candidate for the bachelor's or associate's degree must fulfill the minimum residence requirement. The residence requirement is defined as the satisfactory completion of at least 45 quarter hours of course

work in University College immediately preceding graduation. At least 12 of the 45 quarter hours must be in the candidate's major field of study.

Since the University College residence requirement prescribes the completion of at least 45 quarter hours of credit in residence immediately preceding graduation, a student who intends to graduate in any academic year may not use courses at any other institution for the purpose of transferring credit.

A student whose enrollment in a degree program is interrupted for a period of one year or more will be reinstated in the program at the time of re-entry into University College.

In Absentia Status If a student moves beyond a reasonable commuting distance from University College or its branch campuses but has completed 135 or more quarter hours of credit (including a maximum of 60 quarter hours of transfer credit), the Committee on Academic Standing will consider a petition to allow the student to complete his or her requirements for a University College degree at another approved college. The courses remaining must be completed within two years from the date of official approval of the student's in absentia status.

Senior Status Procedure All potential graduates will be polled during the Fall quarter to determine their intention to graduate during the current academic year. To be considered for graduation in June, a student must return a Commencement Data Card prior to the start of the Winter quarter of the academic year in which he or she expects to graduate. September graduates will be polled during the month of June.

Throughout the academic year, the Office of Academic and Student Affairs issues Senior Status Reports on request to potential graduates in order to assist them with the selection of courses required for program completion. Seniors are encouraged to request a Senior Status Report during the summer prior to the academic year in which they plan to graduate. Petition forms for status reports are available in 102 Churchill Hall on the Boston Campus and at the main office of each branch campus.

Credit by Examination During the Senior Year CLEP or PEP examinations (see below) may be taken by students during their final year of study provided they have met the 45-quarter-hour residence requirement for graduation (see page 20). Because of the time required for CLEP and PEP

exams to be graded and scores returned to the University, students requesting June graduation must take their CLEP and PEP exams no later than the Winter quarter of their senior year.

Transfer Credit Policy

Transfer Credit from Another Institution Students may transfer credit from accredited institutions of higher education when courses completed are applicable to the student's program in University College. The minimum course grade acceptable for transfer credit is C, or 2.0 on a four-point scale. An accredited institution of higher education is an institution having recognition and membership in one of the six regional accrediting associations recognized by the Council on Post-secondary Accreditation.

Transfer Credit Procedure A student who wishes to obtain a tentative evaluation of credits earned from another institution must file a Transfer Credit Petition with the Office of Academic and Student Affairs. The student must then write to the Registrar of the institution previously attended and request that an official transcript (one bearing that institution's seal) be forwarded to the Office of Academic and Student Affairs, 102 Churchill Hall, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115. The transcripts should indicate courses completed, credits, and grades earned. Upon receipt of official transcripts, the Office of Academic and Student Affairs will issue a tentative evaluation of all credits as they apply to the student's program in University College. Official awarding of credit will be recorded on the student's University College transcript when matriculation is approved.

Students who have been dismissed from other institutions for academic or other reasons must enclose with their Transfer Credit Petition a statement from the dean or other appropriate official of the previously attended institution stating the reasons for dismissal. The statement must also include a recommendation for acceptance at University College.

Validation of Required Upper-Level Business Courses for Transfer Credit

Students entering the Bachelor of Science in Business Administration degree program may be required to validate required upper-level business courses that they have taken outside the framework of the program.

"Validation" is the set of procedures that tests whether an upper-level course completed at the lower division of a baccalaureate program should

be accepted for transfer credit in the upper division of a baccalaureate program recognized and approved by the American Assembly of Collegiate Schools of Business. The Bachelor of Science in Business Administration program offered by University College conforms with all standards established by the American Assembly of Collegiate Schools of Business (AACSB). AACSB has been recognized by the Council for Post-secondary Accreditation and by the United States Office of Education as the sole accrediting organization for university baccalaureate and master's degree programs in business administration.

The rationale for validation is based on the distinction between lower-level and upper-level courses. The content and focus of most upper-level courses presupposes a certain amount of prior academic work and general knowledge. Often, students who complete an upper-level course without first having been exposed to the bodies of knowledge presupposed by that course are unable to benefit fully from the upper-level course and therefore fail to develop as much as they should in their understanding of the subject matter. In recognition of this problem, University College has adopted specific validation procedures. Their purpose is to ensure that the knowledge a student has acquired in an upper-level business course completed at the lower division closely approximates in focus and content the knowledge that University College feels is acceptable for a particular upper-level course in a specific area of study.

Generally, students will be able to validate previously earned course credits by taking a sequential course in a reserved section, a department-approved examination, or a CLEP (College Level Examination Program) or PEP (Proficiency Examination Program) examination.

For further information about course validation, please see page 40. Students should also talk with a University College academic adviser for further information about the validation of upper-level business courses for transfer credit.

Evaluation of International Educational Credentials Students requesting an evaluation of international educational credentials for transfer credit in University College will be assessed a fee of \$30. The evaluation will be issued by the Office of Academic and Student Affairs upon receipt of a Transfer Credit Petition, a completed Educational Chronology Form, official copies of all transcripts translated into English, and a check in the amount of \$30, payable to Northeastern Univer-

sity. The official assessment of international educational credentials will be made in accordance with current standards for awarding advanced standing credit at University College or as recommended by the Center for International Higher Education Documentation. The \$30 fee will be waived for any University College student who has matriculated prior to requesting the evaluation.

Course(s) at Another College or University A student who is matriculated in a degree program at University College and who wishes to complete one or more courses at another institution for transfer purposes must obtain written permission from the Office of Academic and Student Affairs prior to enrolling in the course. Courses taken at other institutions may be disallowed unless written permission is obtained in advance. Seniors (students in their final year of study at University College) should refer to information about the residence requirement (see page 20 for further clarification of this policy).

Credit by Examination University College will award credit by examination provided the examination does not represent a duplication of other previously earned academic credit. Credit is granted for successful completion of examinations currently available through the College Level Examination Program (CLEP) of the College Entrance Examination Board and through the Proficiency Examination Program (PEP) of the American College Testing Program. Both programs have been designed to assist students in acquiring college-level credit for knowledge acquired through nontraditional means, such as on-the-job training, educational television, correspondence and extension study, and independent study. Information about these programs is available in the Office of Academic and Student Affairs at University College and at the Northeastern University Counseling and Testing Center.

Modern Language Proficiency Examination Students may be eligible to receive credit for proficiency in a modern language. Examinations are currently offered in French, Spanish, German, Russian, and Italian. Students should contact the Modern Language Department, 360 Holmes Building, telephone 617-437-2234, for information concerning these examinations.

Noncollegiate Experience Credit Law Enforcement students may be granted up to eighteen hours of credit in their program by successfully

completing one or more of the noncollegiate credit examinations that have been made available through their Program Director's office. Examinations are periodically scheduled by the Counseling and Testing Center.

Arts and Sciences students may petition for noncollegiate experience credit through their major adviser if they are matriculated in the Arts and Sciences program with a departmental major. See page 81 (Law Enforcement) and page 59 (Arts and Sciences) for more details on opportunities for noncollegiate experience credit.

Noncollegiate experience credit is not available to Business students, except as available through CLEP or PEP examinations. (See "Credit by Examination," page 22.)

Credit cannot be awarded through noncollegiate experience petitions or examinations when an appropriate examination is available through CLEP or PEP.

Credit for Extracurricular Learning Extracurricular learning is that which takes place outside the sponsorship of legally authorized and accredited postsecondary educational institutions. The term applies to learning acquired from formal courses sponsored by associations, governments, business, and industry.

In awarding credit for extracurricular learning, University College utilizes the *National Guide to Credit Recommendations for Noncollegiate Courses*, published annually by the American Council on Education.

Students applying for credit for extracurricular learning must submit a Transfer Credit Petition and provide official credentials from the sponsoring noneducational organization to the Office of Academic and Student Affairs at University College. The credit may be applied toward degree requirements at University College if recommended in the *National Guide*, provided credit is not otherwise obtainable through CLEP, PEP, or noncollegiate experience credit programs at University College.

Grading System

A student's work in each course is evaluated by the instructor, who awards a letter grade at the end of the quarter. This grade is officially recorded by the Registrar's Office. The grades and symbols used are given below, together with the numerical equivalents used for computing quality point averages:

A	(4.0)
A-	(3.667)
B+	(3.333)
B	(3.0)
B-	(2.667)
C+	(2.333)
C	(2.0)
C-	(1.667)
D+	(1.333)
D	(1.0)
D-	(.667)
F	(0)
I	Incomplete
L	Audit (No Credit)
S	Satisfactory (Pass/Fail Grade)
U	Unsatisfactory (Pass/Fail Grade)
X	Incomplete (Pass/Fail Grade)
*	Grade not received

Grade Reports and Transcripts All efforts will be made to mail grades prior to the beginning of the following quarter. A supplementary grade report will be issued when a missing grade or a grade change is received. University regulations prohibit issuing grades by telephone. Grade reports of matriculated students indicate both their quarterly quality point average and their cumulative quality point average.

Students may obtain a transcript of their grades by making a request in writing to the Registrar's Office, 120 Hayden Hall, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115. Unofficial transcripts are issued free of charge; official transcripts that bear the University seal cost two dollars.

Quality Point Average The method of figuring the quality point average is as follows: the numerical equivalent of each grade received is multiplied by the credit hours earned; the quality points are added together, then divided by the student's total quarter hours. An example follows:

Grade Achieved	Numerical Equivalent	Credit Hours	Quality Points
A	4.0	3	12.0
B-	2.667	3	8.0
C	2.0	6	12.0
F	0.0	3	0.0

$$\text{Quality Point Average} = \frac{\text{Total Quality Points (32.0)}}{\text{Total Credit Hours (15)}} = 2.13$$

Pass/Fail grades (S, U, and X), Incompletes (I), and Audits (L) are not included in the quality point average. Similarly, transfer credits are not included in quality point averages. The total earned hours appearing on the student's transcript, however, include both transfer credits and S grades.

A cumulative grade point average below 2.0 is unacceptable and will not allow a student to continue in University College or to receive a degree from Northeastern University. The F grade is a definite failure and requires repetition of the course in its entirety. A student whose academic performance in any given period is unsatisfactory may be dropped from the College or placed on probation.

The I Grade The I grade, or Incomplete, may be given only when the student fails to take the final examination for a course. An instructor may decide that a student has done so poorly in the course that even a perfect grade in a make-up final examination could not raise the grade from F; in this case F is the proper grade, regardless of the missed final examination.

If the student fails to complete some other major portion of the course work (examination, quizzes, major paper, etc.) a letter grade is assigned. This grade can be changed when the deficiency that led to the assigned letter grade is made up to the satisfaction of, and in the manner prescribed by, the instructor.

All deficiencies must be made up in the prescribed manner no later than twelve months following the recording of the grade. Students requesting an exception to this policy must petition the Academic Standing Committee of University College in writing. A student may also elect to repeat the course at his or her expense.

Pass/Fail Grades Satisfactory completion of work in all courses taken on a pass/fail basis will be designated on the transcript by the letter "S." Unsatisfactory work will be designated on the transcript by the letter "U." Any unsatisfactory grade must be handled according to the existing policy of University College but may never be cleared by enrolling in the same course on the basis of the pass/fail system of grading.

An Incomplete in a course taken on a pass/fail basis will be designated by the letter "X" on the transcript and will be treated according to the normal procedure for grades of Incomplete.

Dean's List All matriculated students who have taken a minimum of twenty-seven quarter hours in three consecutive quarters (for example, Fall,

Winter, Spring) and who have completed all their courses with a quality point average of 3.0 or better shall be placed on the Dean's List. These students receive certificates of commendation from the Dean of University College. See page 20 for information about graduation with honor.

Attendance, Homework, and Examinations

Students are expected to attend all meetings of the classes in which they are registered unless excused in advance. Absence from regularly scheduled classes will seriously affect the student's academic standing. A student who is consistently absent from class will be withdrawn from the course by the Registrar.

Absence Because of Illness All students who are absent from school because of extended illness and who do not wish to be withdrawn should inform the Registrar's Office in writing.

Homework The specific work required for each course in University College is determined by the instructor. In general, it is expected that University College students will spend an average of six to eight hours per week outside of class on assignments for each course. Students who are absent are responsible for obtaining their homework assignments from their instructors or other students in their classes. Homework assignments are not available in the Office of Academic and Student Affairs.

Examinations Tests are scheduled throughout each quarter at the option of the instructor and are regarded as part of the term's course work. A final examination is held at the end of each quarter in each course unless an announcement is made to the contrary.

Missed Final Examinations A student who misses a final examination will be given a grade of I (Incomplete). A student does not automatically have the right to make up a missed final examination. Students must petition for this privilege and must pay a fee of \$25 for each make-up examination. Petitions are available in 102 Churchill Hall and at all suburban administrative offices. Petitions are available for four weeks after the term has ended. Students will be notified prior to the date of the make-up exam whether or not their petition has been approved.

Students who make up a missed final exam will have a letter or pass/fail grade substituted as appropriate for the I grade on their transcripts.

Miscellaneous Policies

Students' Rights and Responsibilities The University subscribes to the view that all students have certain rights and freedoms. For these reasons, the University has adopted and published specific policies and procedures governing the following matters: students' rights and freedoms, general conduct, student discipline, disclosure of information from students' records, and University judicial procedures. Judicial procedures are related to issues of discipline and conduct, the right of students to appeal judgments of their academic performance, grievances based on the fact that a student is handicapped, and allegations of sexual harassment. All policies and procedures governing the above matters may be found in the *University College/Lincoln College Student Handbook*. Copies are available in 102 Churchill Hall at the Boston campus, telephone 617-437-2400. Copies are also generally available at each of the University's branch campus locations.

Family Educational Rights and Privacy Act In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits students to inspect their records whenever appropriate and to challenge specific parts of them when they feel it necessary. Specific details of the law as it applies to Northeastern are available in the *University College/Lincoln College Student Handbook*.

Disciplinary Action The Committee on Regulations and Discipline has the authority to dismiss from the College, place on probation, or remove from the list of degree candidates any student who, because of disruptive or illegal conduct or poor character, is considered an unsuitable member of the College community. The Committee on Regulations and Discipline is an ad hoc subcommittee of the University College Committee on Academic Standing. It is convened at the request of the Committee on Academic Standing.

Change of Address Change of address and/or name should be reported in writing immediately to the Registrar's Office, 120 Hayden Hall, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115.

Attendance at Commencement Attendance at commencement for all University College degree candidates is optional. Degree candidates will be polled regarding their intention to attend com-

mencement by the Northeastern University Commencement Committee during the Spring quarter.

Changes in Requirements The continuing development of University College requires frequent revisions of the curricula. When no undue and unusual hardship is imposed on students because of these changes, students are expected to meet the requirements of the most current *Bulletin*. If a particular student finds it impossible to meet those requirements, the *Bulletin* for the year in which he or she matriculates is binding. **Note:** Students who are planning to pursue a bachelor's degree in business and who obtained fewer than 88 quarter hours of credit by September 1983 are required to pursue the new Bachelor of Science in Business Administration degree program.

Academic programs, course content, and rules and regulations are subject to change without notice.

Career and Academic Counseling Services

Through a wide variety of career and academic counseling services, University College is prepared to assist students in making both educational and career decisions. The College does this in several ways; by providing academic advisers and career counselors; by offering credit and noncredit career-planning workshops and special programs; and by serving as a link to other student support services offered by Northeastern University.

The services, courses, and programs outlined on the following pages have been designed with specific educational and/or career-planning issues in mind. Students are urged to read this section carefully.

New-Student Open Houses

Individuals who are thinking about enrolling in University College for the first time are encouraged to attend an Open House. An Open House introduces potential students to the many University College programs and services designed to meet the educational, job-related, and personal needs of adult part-time students. The Open House also orients new students to the University as a whole and addresses concerns that many students have about:

- choosing courses and registering
- securing financial aid
- obtaining career or personal counseling
- managing work, school, and family responsibilities.

Persons interested in a degree program will have an opportunity to speak with advisers about matriculation requirements, transfer of credit from other colleges, and additional procedures for becoming a student at University College.

Open Houses are ordinarily scheduled each quarter at selected campus sites at or about the same time that registration takes place. Since space is limited, students are urged to express their interest in attending an Open House prior to any given registration period. (See the Academic Calendar on pages vi–viii for a complete registration schedule.) Persons wishing to attend an Open House should notify the Office of Academic and Student Affairs by telephoning 617-437-2400.

Academic Advisers

Academic advisers are available day and evening by appointment in the Office of Academic and Student Affairs and at off-campus locations. They are competent to assist students in planning a program suitable to their educational and career objectives. Advisers can also answer questions relating to degree requirements, course sequences, and proper scheduling of courses. Appointments may be arranged by telephoning the Office of Academic and Student Affairs at 617-437-2400 or by coming in person to 102 Churchill Hall at the Boston Campus. There is no charge for this service.

Academic advisers are also available without appointment to answer general questions during registration periods at all campuses. Throughout the year, academic advisers are available by appointment at satellite campuses. All appointments are arranged through the Office of Academic and Student Affairs at the Boston Campus, telephone 617-437-2400.

Tutorial Services

Through the Office of Academic and Student Affairs, University College offers tutorial assistance in several subjects. Tutoring, which is on a one-to-one basis, provides an opportunity for student and tutor to focus on specific problems that might not have been covered during class time. Students may request tutorial information from the Office of Academic and Student Affairs, 102 Churchill Hall, telephone 617-437-2400. A flyer describing tutorial services is also available in 102 Churchill Hall and at all suburban locations.

Career Counseling

Students in need of career counseling may telephone 617-437-2400 to arrange an appointment with a career counselor. This service is designed for students who need help in choosing a career or in developing effective job-hunting strategies. A career counselor will also explain to students and help them utilize additional services and programs offered by University College and by other offices at Northeastern University.

Self-Assessment and Career Development

One of the strongest motivations for continuing your education is the desire for career advancement or change. In order to help you develop career and educational planning skills, University College offers two three-credit courses in career development. Self-Assessment and Career Development 1 (INT 4110) is designed for persons who feel undecided about a career choice and who need help in defining career and educational objectives for themselves. Self-Assessment and Career Development 2 (INT 4111) is an advanced job-hunting-skills course for persons who are sure of the career area in which they wish to pursue job opportunities. For complete descriptions of these career development courses, see page 164.

Job-Search Seminars

Each quarter the Placement Office and the Office of Academic and Student Affairs offer a series of evening two-hour Job-Search Seminars. The seminars are specifically designed for students who have identified the field or career area in which they would like to work. Students planning to participate should currently be looking for a job or be anticipating a job change in the near future.

These seminars are intended to help students assess their skills, define their immediate career direction, develop effective job-search strategies, write résumés, and prepare for job interviews. Seminar schedules are announced in the *Student Newsletter* and in classes two weeks prior to each seminar series. Students wishing to participate in the Job-Search Seminars must reserve a place in the seminars by calling the University College Placement Office at 617-437-2428.

Cooperative Education Program

University College, in conjunction with Northeastern University's Division of Cooperative Education, has developed a program in cooperative education for matriculated part-time students.

Most students attending University College are employed on a full- or part-time basis. Unfortunately, many University College students find themselves working in jobs that are unrelated to the specific job and career interests reflected in the programs of study they have chosen to pursue. The University College co-op program has been designed to address this problem by helping students enter jobs in work environments that are related to their particular fields of study. Co-op jobs are usually of six to nine months' duration.

In addition to gaining work experience in a setting related to their field of study, students can benefit in other ways from the University College co-op program, including opportunities to:

- explore and select career areas consistent with their values, skills, interests, and abilities
- identify further academic courses appropriate to their vocational objectives
- develop job-finding skills
- enter the work force, reenter the work force, make a career change, or gain upward mobility.

A further and very important objective of the University College co-op program is to help each student find ways to use the work experience gained in a co-op job as a springboard to a more permanent position in the field or career area he or she has chosen. To help facilitate this goal, each co-op student's overall performance will be evaluated by the student's employer and a Northeastern co-op coordinator. This evaluation is shared with the University College placement counselor who is available to help University College students find permanent jobs after they have completed their co-op work experience.

Each quarter, a limited number of students are selected on a competitive basis for the University College co-op program. They are normally placed on co-op jobs during the following quarter.

Only matriculated students (i.e., students who have been accepted by University College to work toward a degree) may apply for co-op. Applicants are selected on a competitive basis. To apply, a student must have completed a minimum of sixty (60) quarter hours of academic credit and have met with a University College career counselor.

Further Information For a brochure containing further detailed information on the University College cooperative education program, including important deadlines, please call 617-437-2428.

Core Career Courses for Women

University College offers a special group of personal assessment and career development courses for women interested in a business career. Through Core Career Courses, women learn to match their skills and competencies to those needed in specific career areas in business. This process, in turn, helps a woman determine which specific jobs in business she is most suited to pursue. The Core Career Courses are also designed to acquaint women with the organizational

dynamics of business settings and to help them develop a basic understanding of the quantitative and technical skills needed for various career areas in business.

A complete list of Core Career Courses may be found on page 164. All Core Career Courses are open to any interested student.

Counseling and Testing Services

Philip W. Pendleton, Director of the Counseling and Testing Center.

Location: 302 Ell Building

Telephone: 617-437-2142

Hours: Monday–Friday, 8:30 a.m.–4:30 p.m.

Tuesday, Wednesday, Thursday,

5:30 p.m.–8:30 p.m., Oct.–May

The Counseling and Testing Center at Northeastern provides a wide variety of services free of charge to all part-time students. Services for University College students include:

Personal Counseling This involves discussing with a counselor such concerns as adjusting to being a student (again or for the first time), getting along with people, feeling anxious or depressed, as well as problems centered around family, sex, drugs, or alcohol.

Educational-Vocational Counseling This involves assisting students in making decisions about choice of major and/or career. It typically involves an in-depth look at one's self, including strengths, aspirations, and values. Tests are often helpful in the process of self-understanding. The kinds of tests available include interest, ability, personality, and aptitude. This kind of planning is usually done individually with a counselor, although small groups may be organized if this approach seems more appropriate.

The goals of the Center's educational-vocational planning service are complementary to those of the University College career-planning courses. Therefore, interested persons are encouraged to explore both options for career exploration and planning and then choose the service that seems best suited to their needs.

Study Skills Workshops (Available during the day only) Workshops are offered periodically to assist students in becoming more effective in organizing their time, in note taking, in preparing for and taking exams, and in other areas related to effective academic performance.

Career and Graduate School Information The Center maintains a reference room with information on a wide variety of careers and graduate and professional schools.

Placement

The University College Placement Office of Northeastern's Department of Career Development and Placement provides a number of free career placement services to University College students. Among the services provided to all students are a reference library of employer information, a job bank of employment opportunities, evening job-search seminars, and seminars on careers of interest.

Students who are enrolled in a degree program are eligible for additional career services such as job placement counseling, nonpaid internships, placement registration, and résumé referral to employers. In addition, seniors may take advantage of corporate on-campus recruiting (daytime) during the Fall and Winter quarters and a credential service for persons applying to graduate school.

The Placement Office is open at least one evening a week in addition to regular daytime hours and is located in 133 Nightingale Hall. For further information students should call the University College Placement Office at 617-437-2428.

Tuition and Fees

Tuition and fees are refundable only as stated under "Refund of Tuition." Checks and drafts for all charges are to be made to the order of Northeastern University.

Tuition for Courses in Other Departments or Colleges of the University

University College students assigned to courses in other departments or colleges of the University are charged the tuition fees effective in the departments or colleges in which they are enrolled.

Initial Registration Fee

A nonrefundable \$10 registration fee for first-time students is billed with tuition fees.

Tuition

Tuition for all credit courses is \$75 per quarter hour of credit. Charges for registration and tuition for special courses are at the rate specified for each course. There is no reduction in fees in auditing courses.

Noncredit courses are charged at quarter hour rates comparable to those of credit courses meeting on an equivalent contact hour schedule.

Students are not permitted to attend class sessions or take any examination or test until they have paid their tuition fees or have made satisfactory arrangements for payment.

It is the student's responsibility to ensure that all tuition charges and fees are paid when due. If a bill has not been received prior to the start of classes each quarter, the student should come in person to the Bursar's Office, where a bill will be processed.

Any discrepancies in billing should be immediately brought to the attention of the Bursar's Office. If there is a billing problem, the undisputed portion of the bill should be paid on time to avoid any additional late fees. Failure to receive a bill through the mail or to pay the undisputed portion of the bill are not justification for late payment of amounts actually owed.

Students will not be advanced in class standing or permitted to reenroll in the University nor will degrees be conferred until all financial obligations to the University have been met.

Tuition Budget Payment Plans Occasionally situations develop—usually beyond the control of the student—that make it difficult to meet the payments in the manner outlined above. Under such circumstances the student is advised to contact the Bursar's Office, where a deferred payment agreement may be worked out. The only deferred payment plan offered is as follows and applies only to the amount owed for the current quarter:

1st payment	1/3 due 1st week of quarter
2nd payment	1/3 due approx. 4th week of quarter
Balance	1/3 due approx. 8th week of quarter

Such arrangements should be made before the end of the first week of the quarter or within one week of the date of registration if the student enters late. Deferred payment of tuition entails a fee of \$10, which is levied on all accounts not paid by the end of the second week of classes. Failure to take immediate action will result in a late payment fee of \$50.

Tuition Underwritten by Employers An increasing number of companies are underwriting part or all of the cost of tuition of students in their employ. In cases where payment is to be made directly by the employer to the University, the student should furnish the Bursar's Office with a purchase order covering registration or a statement from an officer of the company certifying that the company is underwriting the tuition. In cases where students are being reimbursed by their employer, tuition must be paid by the student according to the prescribed regulations to avoid late payment charges.

Veterans' Benefits Any veteran covered by Public Law 89-358 should report to Room 116 Hayden Hall to fill out the proper enrollment forms.

Late Payment Fee Bills for tuition and fees are payable in accordance with the due date shown. A late payment fee of \$50 will be charged for failure to make payments in accordance with the prescribed regulations.

Refund of Tuition The general policy in all schools and colleges of the University with respect to refunds of tuition is as follows:

The University provides all instruction on an academic quarter basis for which students pay at the beginning of each quarter. Tuition refunds will be granted through the first four weeks of a quarter only when specific conditions are met. Questions regarding refunds should be discussed with the Bursar.

Tuition refunds will be granted only on the basis of the date appearing on the official withdrawal application when filed with the Registrar in Room 120 Hayden Hall. Nonattendance does not constitute official withdrawal.

Refunds will be granted in accordance with the following schedule:

Official withdrawal filed within	Percentage of tuition
1st week of quarter	100%
2nd week of quarter	75%
3rd week of quarter	50%
4th week of quarter	25%

Fees

Student Center Fee All students in University College on the Huntington Avenue Campus are charged \$.75 each quarter for the services available in the Student Center.

Laboratory Fees Students enrolled in courses that carry a laboratory fee must purchase a Laboratory Fee and Deposit Card from the Bursar's Office (\$10 for extra cards).

A fee of \$30 is charged for biology courses and a fee of \$30 for health professions courses that include a laboratory. For chemistry courses the cards cost \$30 per quarter with the possibility of a \$5 refund at the end of the quarter, depending upon breakage. Upon completion of the course or withdrawal during the quarter, the student must check his or her status with the laboratory attendant. The Bursar's Office will then refund any unused balance shown on the Laboratory Fee and Deposit Card.

A laboratory fee of \$30 is charged for film and photography courses and may be charged for an art studio course, if the instructor deems it necessary. A \$35 fee is charged for the food preparation course in the Hotel and Restaurant Management program.

A laboratory fee of \$30 is charged for arts and crafts courses and for Law Enforcement students who enroll in Forensic Laboratory.

Music students enrolled in an instrument tutorial pay a special rate. For details contact Edgar

Weiss, University College Music Coordinator, 307 Ell Building, telephone: 617-437-2440 or -2442.

Graduation Fee The University graduation fee, charged to those who are candidates for the baccalaureate or associate degree, is \$35, payable on or before May 1 of the year in which the student expects to graduate.

Missed Final Examination Fee Students absent from the regularly scheduled final examination at the end of a course may petition for a "Missed Final Examination." The fee for each examination requested by the student is \$25. The fee must be paid when the petition is filed in the University Registrar's Office.

Transcripts

Students may request official transcripts of their grades at the Registrar's Office. There is a charge of \$2 per copy, payable in advance. Unofficial transcripts are issued free of charge.

Scholarships and Financial Aid

Scholarships

The following University College and Lincoln College scholarships and awards are available to students who have been accepted as degree candidates (i.e., who have earned at least 18 quarter hours of credit and have a matriculation certificate) and are in good academic standing.

Scholarships are awarded once a year by the Scholarship Committee. Final selection of scholarship recipients is usually made in late May, followed by the awarding of the scholarships in late June or early July. Funds are usually applied to tuition expenses for the following academic year. Awards range in amount from \$250 to \$700.

Application Procedure In January, a mailing list of students who have requested applications is prepared, and applications are mailed out with the stipulation that they be completed and returned to the Office of the Dean by March 31. A student may be placed on the January mailing list by calling 617-437-2400 and leaving his or her name, address, and student I.D. number with the receptionist.

Professor Joseph A. Mullen Scholarships

The Massachusetts Chapter of the American Society for Training and Development has established a fund to provide annual scholarship awards to deserving part-time students upon the recommendation of the Dean of University College.

Martin Luther King Jr. Scholarships

Established in 1969 in memory of the late Rev. Martin Luther King, Jr. Awards are made, as openings occur, to a limited number of adults from minority groups who would otherwise be unable to continue their education. Stipends can cover tuition expenses not to exceed six quarter hours in any academic quarter (excluding Summer quarter). Northeastern University's Office of Financial Aid, located in 254 Richards Hall, administers these scholarships.

Kappa Tau Phi Scholarships

The Kappa Tau Phi Sorority Scholarship Fund annually makes available scholarship awards. They are granted to women students in the arts and sciences, business, and engineering programs who rank high-

est at the end of the upper-middle year. In the event that the chosen student is eligible for an award of greater monetary value, the award will be made to the next highest-ranking woman student. To be eligible for this scholarship, the student must be enrolled in a program of at least two evenings per week and must be a candidate for the bachelor's degree. In determining the recipient, grades of all courses completed in prior years shall be considered.

Harry Olins Memorial Scholarship

The Harry Olins Memorial Scholarship Fund was established as an expression of firm belief in University College students and "what they stand for." The fund, presented by Mrs. Harry Olins in recognition of her husband's long service on the business faculty, makes available an annual tuition award to students who, in terms of scholastic achievement, character, and personal need, best typify the spirit of Northeastern University. To be eligible for this award, the student must be a business administration degree candidate and carry a full academic load during the school year.

William J. McGovern Memorial Scholarship

The William J. McGovern Memorial Scholarship was established in 1978 by an anonymous donor to honor the memory of William J. McGovern. The donor wishes to assist others in realizing their potential through higher education. The income from this scholarship will benefit worthy undergraduate students actively pursuing studies in University College or Lincoln College. Recipients must be in a matriculated status, demonstrate financial need and academic achievement, and must exhibit a high level of professional promise.

Eva Needle Memorial Scholarship

The Eva Needle Memorial Scholarship Fund was established in 1965 with the aid of the Norman Knight Charitable Foundation and is maintained through the generosity of the friends of Bob and Ted Needle in memory of their mother. The income from the Scholarship Fund is awarded annually to a deserving student in the accounting program who demonstrates superior academic achievement. The recipient is selected jointly by Ted Needle, a long-standing member of the University College accounting faculty, and the Scholarship Committee.

H. Patricia Taylor Scholarship Fund The H. Patricia Taylor Scholarship Fund was established in 1974 by H. Patricia Taylor, a graduate of University College, and her husband, Harry C. Taylor, a graduate of the School of Business. The scholarship expresses their appreciation for financial assistance made available to Mrs. Taylor while obtaining her degree and is an attempt to provide similar funds to assist others in realizing their potential through higher education. The income from the scholarship fund will be awarded annually to a student enrolled in University College or Lincoln College who demonstrates financial need and academic stability and who meets certain other conditions of eligibility.

University and Lincoln College Faculty Society Memorial Scholarship Awards The Faculty Society of University and Lincoln Colleges, Northeastern University, offers two awards annually, primarily for excellence in studies, to bachelor's degree candidates in University and Lincoln Colleges who have carried and are currently carrying a minimum of 24 quarter hours annually. Applications, available during the Winter quarter, must be returned before the Spring quarter. These awards are known as University and Lincoln College Faculty Society Club Memorial Scholarship Awards in commemoration of the Club's deceased members.

U.S. Navy Field Training Supervisors Association Memorial Scholarship A scholarship fund has been established through the generosity of the United States Navy Field Training Supervisors Association, in commemoration of the Association's deceased members. The scholarship is awarded annually to a deserving student, selected by the Scholarship Committee, who is a management major working toward a Bachelor of Science degree in the evening program of University College.

Roberta Macycove Wasserman Memorial Scholarship This scholarship was established in 1976 through the generosity of family members and friends of Roberta Macycove Wasserman, who, at the time of her death in 1975, was pursuing arts and sciences studies within University College. The income from the Memorial Scholarship Fund is awarded annually to a deserving female student who is a homemaker with family responsibilities and who is pursuing part-time studies within University College. The recipient shall demonstrate financial need, soundness of character, and academic stability.

Sigma Epsilon Rho Honor Society Scholarship Award The Sigma Epsilon Rho Honor Society Scholarship Award, established in 1974 by the membership of the Society, is awarded annually to an undergraduate student of University or Lincoln College at Northeastern University. Eligible students must have a cumulative quality point average of 3.0 or better after completing 80 percent or more of their required studies.

Transportation Club of New England Scholarship The Transportation Club of New England provides approximately eight scholarships annually for persons employed in transportation and industry traffic departments. The scholarships are applicable toward tuition, books, and incidental expenses involved in transportation management courses. The purpose of the plan is to afford a limited number of people an opportunity to expand and improve their education by systematized study in courses in the field of transportation and distribution management. The scholarships are administered cooperatively with the Scholarship Committee of the Transportation Club of New England. Applications may be secured from and filed with Mr. Frank Smith, Secretary, Transportation Club of New England, Post Office Box 121, Reading, Massachusetts 01867. Each applicant must be sponsored by a member of the Transportation Club.

Electronics Industries Personnel Association Scholarship This scholarship was established in 1980 through the generosity of the Electronics Industries Personnel Association. The income is awarded annually to one or more students enrolled and matriculated in the Personnel and Industrial Relations program in University College. Recipients shall demonstrate financial need, soundness of character, and academic stability.

Awards

John W. Robbins Prize The John W. Robbins Prize was established in 1984 under the terms of the will of the late Lena C. Robbins, in memory of her husband, John W. Robbins, an alumnus of Northeastern University. The income from this memorial gift will be awarded annually to the outstanding student (Class Marshall) of the graduating class of University College.

Financial Aid

The Office of Financial Aid, located in 254 Richards Hall, offers several types of assistance to part-time students. All awards are based on fi-

financial need. Aid granted from programs sponsored by the federal government is dependent upon the amount of funding allocated to Northeastern University. The University does not award financial assistance in any form to students who are not citizens or permanent residents of the United States.

Satisfactory Academic Progress for Financial Aid Recipients

Recipients of financial aid are required to make satisfactory academic progress in order to continue their eligibility for aid. University College defines "satisfactory academic progress" as

- a minimum course load of six credit hours per quarter
- a minimum average of C, or 2.0, in these courses
- a cumulative academic record in any given academic year (September through June) that reflects that the financial aid recipient has registered for a minimum of 18 quarter hours of credit and satisfactorily completed at least 12 quarter hours of credit with an overall quality point average of 2.0 or better.

If at the end of any given academic year, a student receiving financial aid has failed to make satisfactory academic progress toward his or her degree, the Office of Financial Aid will be notified by University College.

Pell Grant The Pell Grant Program is a federal aid program designed to provide financial assistance to degree candidates who need it to attend post-high school educational institutions. Pell Grants are intended to be the "floor" of a financial aid package and may be combined with other forms of aid in order to meet the full costs of education. The Pell Grant is an award and, unlike a loan, does not have to be repaid. Half-time students taking at least six credit hours each quarter may now apply for awards ranging up to one-half the maximum allowable by law, contingent upon the total cost of education. Applications are available in the Office of Financial Aid, 275 Richards Hall, or by writing to the Pell Grant Program, Post Office Box 84, Washington, D.C. 20044.

Massachusetts State Scholarship Massachusetts residents enrolled as full-time students (i.e., 12 credit hours per quarter for Fall, Winter, and Spring) may be eligible for a Massachusetts State Scholarship. To apply, students must submit a Massachusetts Financial Aid Form (MFAF) for res-

idents of Massachusetts. The deadline date for applications is March 1. Massachusetts State Scholarships are awarded based on need as determined by the Massachusetts Financial Aid Form.

Guaranteed Student Loan Program The Guaranteed Student Loan Program enables a student to borrow a maximum of \$2,500 per academic year directly from a bank, credit union, or other participating lender in the student's home community. The loan is guaranteed by a state or private nonprofit agency and is insured by the federal government. The interest on the loan will be subsidized by the federal government while the student is in school. **The loan must be repaid.**

Students whose families have an adjusted gross income below \$30,000 will be eligible for a loan if they are enrolled or have been accepted for enrollment at least half-time in an institution of higher education and are citizens or nationals of the United States. Students whose families exceed this income ceiling may be eligible if they can show financial need in accordance with U.S. Department of Education guidelines. All students are eligible for federal interest benefits. Under these benefits, the federal government will pay the interest until the student begins repaying the loan.

The legal maximum loan borrowed through the Guaranteed Student Loan Program for any single academic year is \$2,500. The maximum loan for an entire undergraduate program is \$12,500.

The maximum loan amount in one academic year may never exceed the cost of education, less other financial aid received. In practice, however, the Guarantee Agency in the state where the loan is written may set loan limits less than these maximums. In the final analysis, the lender decides the amount of the loan.

Repayment of a Guaranteed Loan usually begins six months after a student withdraws or graduates from an educational institution or ceases to carry at least a half-time course load. The repayment period may be as long as ten years. The amount of the payments depends upon the size of the debt and the student's ability to pay; in most cases, the borrower must pay at least \$600 per year.

During the repayment period, the loan carries a simple interest rate of 9 percent per annum, which is paid by the borrower.

Note: For students who have previously participated in the Guaranteed Student Loan Program

and who have outstanding loans at 7 percent, the interest rate on subsequent loans will continue to be 7 percent.

Repayment on loans may be deferred if the borrower returns to at least half-time study at an eligible educational institution. Deferment of repayment is also allowed for up to three years of service in the armed forces, Peace Corps, or full-time programs conducted by ACTION. In most cases, the actual repayment schedule will be established by the lender shortly after the borrower leaves school.

Students who borrow funds through the Guaranteed Student Loan Program are subject to certain legal responsibilities that include:

1. Students must report any of the following changes to the lending institution:
 - a. withdrawal from school
 - b. transfer to another school
 - c. reduction of course load to less than half-time
 - d. change of address or parents' address
 - e. change of name.
2. Students are liable for any false information that they report on the application.
3. Students must use the loan funds for educational purposes only.
4. If a student fails to repay the loan as agreed under the Federally Insured Loan Program Regulations, legal action can result.

Failure to comply with any of the above responsibilities could make a student ineligible for any future loans from the program.

Additional information about financial aid is available from the Office of Financial Aid, 254 Richards Hall, telephone 617-437-3190.

All federal financial aid programs are subject to change depending on adequate and continuing federal support.

Student Activities

Student activities for part-time students are planned, organized, and operated by the student body, with the assistance of the Director of University-Lincoln College Student Activities. The programs are designed to keep pace with the changing needs of adult students and to provide maximum opportunity for student participation. All part-time students in University College and Lincoln College are welcome to participate.

The program is flexible in nature and pioneering in spirit to meet the needs of adult students. The Office of University-Lincoln College Student Activities is particularly interested in developing new clubs that will benefit students professionally and educationally. If students wish to start clubs related to their professions, this office will help them plan and organize clubs on the local and national levels. The program is dedicated to assisting the adult student in the development of his or her fullest potential. The University-Lincoln College Student Activities Office is located in 102 Churchill Hall, telephone 617-437-2400.

Purpose

The purposes of part-time student activities are to provide opportunities for the development and pursuit of cultural interests and professional objectives; to encourage the development of leadership activities and skills; to enable the student to identify more closely with the University; and to include the family as an important and vital motivating force in the part-time student's educational career.

Sigma Epsilon Rho Honor Society

Sigma Epsilon Rho is the honor society of University College. Its purposes are to promote acquaintance and good fellowship among those students who have attained highest scholastic standing in the College; to stimulate the student body to higher scholastic accomplishment through the bearing, influence, and work of these selected men and women; to develop methods of mutual improvement and advancement among members; and to support high moral, professional, and scholastic ideals.

Only honor graduates or seniors with honor standing at the end of the junior year are eligible

for admission to the society. Admission is by invitation after nomination by the society.

An outstanding book is awarded each year by Sigma Epsilon Rho Society to the highest-ranking student at the conclusion of the junior year. Students will receive the award only in the event that they enroll for the subsequent year.

Lambda Alpha Epsilon

Lambda Alpha Epsilon is a national law enforcement fraternity founded in 1957. The Northeastern Chapter, Kappa Phi Beta, is open to part-time and day students enrolled in law enforcement, security, and correctional practices programs, and to professional men in the fields of law enforcement and security. The fraternity is dedicated to the furtherance of professional standards in law enforcement.

Gymnasium Facilities

Part-time students may utilize the gymnasium facilities from 4:00 to 9:30 p.m. Monday through Friday, and during all open hours on Saturday, Sunday, and holidays. A valid Northeastern student identification card and a photo identification card must be presented to gain access to the facilities.

Specific schedules for use of the pool, Nautilus and Universal weight rooms, indoor track and cage, gymnasium, gymnastics room, and wrestling room are available at the beginning of each quarter in the Intramural Sports Office, Room 110 Cabot.

Alumni Association

More than 93,000 alumni are united within an Alumni Association, created to establish a mutually beneficial relationship between Northeastern and its graduates. The Association is governed by an Executive Committee elected from the alumni community. Membership into the Association is automatic upon graduation.

The Association is headquartered in the Office of Alumni Relations in 125 Richards Hall. The official records and addresses of alumni are maintained in the Office of Alumni Records, 236 Huntington Avenue.

Activities of the Association include the Homecoming celebration, presentation of the Outstanding Alumni Awards, and the annual presentation of Professional Promise Awards to outstanding seniors in each of the Colleges. The Alumni Office also is involved in establishing diverse enrichment and education programs to meet the contemporary vocational and avocational needs of Northeastern's graduates. The Alumni Association has also initiated a successful group travel program to provide the alumni of Northeastern with interesting, economical opportunities in foreign travel. Notice of all activities is provided in the Northeastern alumni magazine and in special publications.

Regional alumni clubs have been established from coast to coast. All alumni are eligible to become members of these organizations. The clubs meet periodically with a varied program, often in conjunction with professional and athletic events, faculty visits, and service projects. Additionally, alumni class organizations conduct reunions for their respective classes every five years.

The Association sponsors and assists constituent organizations that focus on common professional and avocational interests and college affiliations. These groups have their own officers and conduct various programs throughout the year.

In addition, alumni volunteers in many metropolitan areas across the nation represent the Admissions Office on a continuing basis at high schools and community colleges.

Programs of Study

University College conducts part-time educational programs at the undergraduate level during day and evening hours. The programs are designed to help meet the varying needs and interests of adult students who may enroll as students following degree programs or as nondegree students taking single courses or special programs.

University College programs leading to the Bachelor of Science, Bachelor of Science in Business Administration, and Bachelor of Arts degrees help provide opportunities for cultural and professional development equivalent in quality and scope to those offered in the conventional four-year college enrolling full-time students. The bachelor's degree requires approximately 174 quarter hours of credit.

Programs leading to the Associate in Science degree help provide students with a background in fundamental areas in business administration, arts and sciences, law enforcement, and health professions. The Associate degree requires 96 quarter hours of credit and is equivalent to the conventional two-year, or junior, college in scope and quality.

Degree curricula are offered in the following areas:

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Course descriptions are listed in alphabetical order beginning on page 133.

Business Administration

Dorothy M. Oppenheim, Assistant Dean
 Director, Business Administration Programs
 Audrey G. Emmer, Assistant to the Director, Business Administration Programs
 Telephone 617-437-2418

Purpose

University College recognizes that adult students seek educational opportunities in business to satisfy many different professional needs. To help meet these needs, University College offers a wide selection of business and business-related courses, as well as structured academic programs. Among the available options are eight certificate programs, eleven associate degree programs, and four baccalaureate degree programs. All certificate and degree programs share the common objective of offering students an opportunity to achieve professional competence in a formal set of business subjects, while laying the foundation for further professional growth.

The Programs

Certificates in Business University College offers eight different certificate programs for individuals seeking to build or advance a marketable specialization in business. The professional areas covered by the certificate programs include: Accounting, Computer Systems and Programming, Finance, Hotel and Restaurant Management, Human Resources, Marketing, Purchasing, and Transportation and Physical Distribution Management.

The University College Certificate Programs in Business are designed for:

- students who plan to complete an associate degree and possibly a bachelor's degree but who first want to acquire the marketable skills offered in the certificate program
- individuals seeking an intensive course of study in a business discipline but not wishing to acquire a degree
- individuals already holding a degree who wish to acquire specialized knowledge for career change or professional development.

All certificate programs are designed so that transfer into a related degree program is possible.

Certificates can be earned based on academic work completed within the last five years. Detailed information on these certificate programs, together with a recommended course sequence for completing them, appears in the section on certificate programs, pages 119 to 127.

Associate in Science Degree Northeastern offers part-time students a choice of eleven business programs leading to the Associate in Science degree: Accounting, Business Administration, Finance, Hotel and Restaurant Management, Human Resources Management, Industrial Management, Management Information Systems, Marketing, Purchasing, Real Estate, and Transportation and Physical Distribution Management.

These programs provide breadth of perspective through exposure to a well-balanced sequence of arts and sciences courses. Specialized knowledge for future managerial growth may be acquired through the study of a core of professional business courses and a major or concentration in a business discipline. Students who have completed a certificate program may enroll in an associate degree program. While the credits earned in a certificate program may be applied toward this degree, completion of a certificate program is not required for the associate degree. To be awarded the associate degree, a student must successfully complete the 96 quarter hours of course credit detailed on the following pages.

Bachelor of Science in Business Administration Degree

The Bachelor of Science in Business Administration degree is offered in Accounting, Management, and Management Information Systems. Students who have clearly decided to pursue a baccalaureate degree in business should enroll in the courses detailed on page 42 prior to petitioning for admission to the Bachelor of Science in Business Administration degree program. These courses will provide students with the broad educational foundation needed for the study of professional-level courses in business administration.

Students who wish to earn one of the Associate in Science degrees in business prior to entry into the Bachelor of Science in Business Administration degree program are advised that the Univer-

sity College Bachelor of Science in Business Administration degree program includes a validation requirement for upper-level business courses taken while pursuing the associate degree. (See details below.)

Admission to the Bachelor of Science in Business Administration degree program is restricted to students who have maintained a 2.0 cumulative grade-point average and completed a minimum of 80 quarter hours (60 semester hours) of credit, including certain basic courses in required subjects, either in University College or at another accredited institution. There is a special application form for admission to the Bachelor of Science in Business Administration program.

The Bachelor of Science in Business Administration degree program conforms with all standards established by the American Assembly of Collegiate Schools of Business (AACSB), which has been recognized by the Council for Post-secondary Accreditation and by the United States Office of Education as the sole accrediting organization for university bachelor's and master's degree programs in business administration. While there are more than 2,000 college and university business programs in the United States, fewer than 10 percent of these institutions offer business programs that are fully accredited by AACSB. Northeastern University is unique in the New England region in that both its full-time and part-time baccalaureate degree business programs are accredited.

Validation Requirement

"Validation" is the term used to describe a set of procedures that tests whether an upper-level course completed at the lower division of a baccalaureate program should be accepted for transfer credit in the upper division of an AACSB-approved baccalaureate degree program.

There are three approved validation methods.

1. *Sequential Course.* Students who enroll in the Bachelor of Science in Business Administration degree program can validate a course taken at University College or elsewhere by successfully completing a course that is sequential to the course already completed. The sequential course must be taken in a reserved section. For example, successful completion of Financial Management 1 in a reserved section can validate Principles of Finance or a comparable introductory course in finance, regardless of where the student completed the course. Similarly, by successfully com-

pleting Marketing Management 1 in a reserved section, a student can validate Introduction to Marketing 1.

2. *College Level Examination Program (CLEP) and/or Proficiency Examination Program (PEP).* These standardized examinations can be used to validate some previously taken upper-level business courses.

3. *Departmental Examination.* In cases where a sequential course does not exist or is not desired by a student, and no appropriate CLEP or PEP examination exists, validation can be accomplished through a departmental examination.

Please note that certain courses do not require validation. They include the following: Accounting Principles 1, 2, and 3; Introduction to Business and Management 1, 2, and 3; Introduction to Data Processing and Information Systems 1 and 2; Law 1 and 2; and all computer programming language courses. Also, business-related courses in other disciplines do not have to be validated. Examples are courses in economics and statistics.

In addition, previously taken upper-level business courses that are not required for a particular business concentration are considered to be electives and do not need validating. For example, an upper-level course in cost accounting would not require validation for management concentrators, since cost accounting is not a required course for management concentrators in the Bachelor of Science in Business Administration degree program.

Students need to be aware that all scheduled sections of certain University College business courses required for a Business degree are classified as either *reserved* or *open*. Eligibility to register for reserved or open sections depends on the total number of course credits (including transfer credits) that a student has accumulated.

The following courses are considered upper-level business courses and are scheduled as reserved or open sections.

Business Courses with Sections Classified as Reserved or Open

ACC	4301	Intermediate Accounting 1
ACC	4302	Intermediate Accounting 2
ACC	4303	Intermediate Accounting 3
ACC	4304	Intermediate Accounting 4
ACC	4310	Cost Accounting 1
ACC	4311	Cost Accounting 2
ACC	4340	Federal Income Taxes 1
ACC	4341	Federal Income Taxes 2
ACC	4325	Auditing
ACC	4330	Internal Auditing 1

MKT	4301	Introduction to Marketing 1
MKT	4320	Marketing Management 1
FI	4301	Principles of Finance
FI	4302	Financial Management 1
MGT	4310	Project Planning and Control
MGT	4350	Business Policy 1
MGT	4351	Business Policy 2
MGT	4360	Management Seminar 1
MGT	4361	Management Seminar 2
MGT	4355	Manager and Society
MGT	4356	International Business Management Operations
IM	4301	Production Management 1
MIS	4301	Systems Analysis and Design 1
MIS	4302	Systems Analysis and Design 2
MIS	4303	Systems Analysis and Design 3
MIS	4304	Systems Analysis and Design 4
MIS	4310	Data Systems Administration
MIS	4311	Business Data Processing Applications 1
MS	4330	Operations Research
HRM	4301	Organizational Behavior
HRM	4302	Introduction to Human Resources Management
HRM	4303	Applied Human Resources Management

Open Sections An open section of a course is one in which students may register without any restrictions. Any course not listed above is offered in open sections *only*. Many University College business courses are offered in open sections only. In addition, all arts and sciences, law enforcement, health, and engineering courses are offered in open sections only.

Reserved Sections A reserved section of a course is restricted to students who have accumulated 80 or more course credits. Those business courses offered in both reserved and open sections are listed above. *Reserved sections of certain business courses are mandatory for students who have matriculated into one of the three Bachelor of Science in Business Administration degree programs.*

Planning a Program of Study

Current Students Currently enrolled students, including those who have already been awarded transfer credit by the Office of Academic and Student Affairs, may have their credits reevaluated toward one of the Bachelor of Science in Business Administration degree programs by completing a General Petition, which will enable students to review their degree program options and select the program that best suits their

needs. The General Petition may be requested by calling 617-437-2400. Petitions are also available at all campus locations. After receiving an evaluation of their transfer credits, students may schedule an appointment with an academic adviser to discuss the alternative academic programs available to them.

New Students Students who plan to enter University College to work toward the Bachelor of Science in Business Administration degree should submit to the Office of Academic and Student Affairs transcripts of previously completed college-level coursework and a Transfer Credit Petition. (Transfer Credit Petitions may be requested by calling 617-437-2400. They are also available at all campus locations.) Students will receive by mail a transfer credit evaluation and a suggested plan of study to prepare for admission to the Bachelor of Science in Business Administration degree program. When this paperwork has been completed, students are encouraged to schedule an appointment with an academic adviser to discuss their programs.

Students who do not have any academic courses that may be transferred from another educational institution or program should plan to meet with an academic adviser early in their studies in University College. These students will be required to complete 80 quarter hours of credit, including English 1, 2, and 3; Mathematics 1, 2, and 3; and a social science elective from the group of courses listed at the end of the next section. The course work must be completed prior to admission to the Bachelor of Science in Business Administration degree program.

Admissions Requirements A Petition for Admission to the Bachelor of Science in Business Administration degree program must be completed and returned to the Office of Academic and Student Affairs to initiate the admissions process. This petition may be obtained at all campus locations or by calling 617-437-2400.

To be admitted to the Bachelor of Science in Business Administration degree program, students must have completed at least 80 quarter hours of credit with an overall grade point average of C (2.0) or better. This course work must include English 1, 2, and 3; Mathematics 1, 2, and 3; and one social science elective or its equivalent. Students are encouraged to earn their remaining credits by selecting courses from the recommended lower-level course listing that follows.

Recommended Lower-Level Courses

				quarter hours
Arts and Sciences Courses				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ENG 4380	ENG 4381		Business Writing and Reports 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
or			or	or
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
SPC 4101			Effective Communication 1	3
Business Administration Courses				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MGT 4101	MGT 4102	MGT 4103	Introduction to Business and Management 1, 2, 3	9
Nonbusiness Electives				6
Elective in Natural Sciences				3

Bachelor of Science Degree (to be phased out as of June 1986) Students who had accumulated 88 or more quarter hours of credit by September 1983 were allowed to continue to work toward a bachelor's degree under the course and program requirements in effect until the Fall quarter of 1983. However, students continuing in these programs must complete the degree by June 1986, since these programs will no longer be available after that date. Students pursuing Bachelor of Science degree programs that will be discontinued in June 1986 should consult the 1982-83 University College *Bulletin* for details on degree requirements.

Business Minor Students enrolled in Bachelor of Science degree programs outside the area of

business may choose to minor in business. A minor in business may be attractive to individuals seeking to enhance their professional credentials without necessarily obtaining a business degree.

Individuals who earn an associate degree in a business program and transfer to a bachelor's degree program other than business have the option of earning a minor in business administration. Students earning a bachelor's degree in a nonbusiness area are permitted to accumulate up to 44 quarter hours (25 percent of the credits toward a bachelor's degree) in business subjects. Any credits accumulated beyond this limit from business courses cannot be used to fulfill the graduation requirements for a B.S. degree in a nonbusiness area.

Accounting (Major Code 470)**Associate in Science Degree****quarter hours****Core Courses—Arts and Sciences**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3

Core Courses—Business Administration

MGT 4101			Introduction to Business and Management 1	3
IM 4301			Production Management 1	3
BL 4101	BL 4102		Law 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
FI 4301			Principles of Finance	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
MKT 4301			Introduction to Marketing 1	3

Choose one computer programming course from:

MIS 4220			Introduction to Programming in COBOL	3
MIS 4240			Introduction to Programming in BASIC	3
MIS 4250			FORTTRAN Programming 1	3

Major Concentration Courses

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
ACC 4301	ACC 4302	ACC 4303	Intermediate Accounting 1, 2, 3	9
ACC 4310			Cost Accounting 1	3

Nonbusiness Electives

3

Total Credits**96****Business Administration (Major Code 401)****Associate in Science Degree****quarter hours****Core Courses—Arts and Sciences**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3

Core Courses—Business Administration

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
MGT 4101	MGT 4102	MGT 4103	Introduction to Business and Management 1, 2, 3	9
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
FI 4301			Principles of Finance	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
HRM 4303			Applied Human Resources Management	3
MKT 4301			Introduction to Marketing 1	3

Nonbusiness Electives 6

Open Electives 12

Total Credits 96

Recommended course sequence for the three-year program leading to the Associate in Science Degree in Business Administration. (It is recommended that students in the other Associate in Science degree programs follow a similar sequence.)

	Quarter 1	Quarter 2	Quarter 3
First Year	English 1 Accounting 1 Introduction to Business and Management 1 Psychology	English 2 Accounting 2 Introduction to Business and Management 2 Psychology	English 3 Accounting 3 Introduction to Business and Management 3 Elective
Second Year	Economics 1 Math 1 Introduction to Data Processing and Information Systems 1 Elective	Economics 2 Math 2 Introduction to Data Processing and Information Systems 2 Elective	Economics 3 Math 3 Elective Elective
Third Year	Organizational Behavior Statistics 1 Elective	Introduction to Human Resources Management Statistics 2 Elective	Applied Human Resources Management Introduction to Marketing 1 Principles of Finance

Finance (Major Code 476)	Associate in Science Degree
	quarter hours

Core Courses—Arts and Sciences

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3.
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3

Core Courses—Business Administration

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
MKT 4301			Introduction to Marketing 1	3
BL 4101	BL 4102		Law 1, 2	6
MGT 4101			Introduction to Business and Management 1	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
MKT 4301			Introduction to Marketing 1	3

Choose one computer programming course from:

MIS 4220	Introduction to Programming in COBOL	3
MIS 4240	Introduction to Programming in BASIC	3
MIS 4250	FORTTRAN Programming 1	3

Major Concentration Courses

FI 4301		Principles of Finance	3
FI 4302	FI 4303	Financial Management 1, 2	6
FI 4310		Investment Principles	3
FI 4320		Credit Principles	3
FI 4325		Budgeting and Planning	3

Nonbusiness Electives

3

Total Credits**96****Hotel and Restaurant Management (Major Code 472)****Associate in Science Degree****quarter hours****Core Courses—Arts and Sciences**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3

Core Courses—Business Administration

ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MGT 4101		Introduction to Business and Management 1	3
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
HRM 4303		Applied Human Resources Management	3

Major Concentration Courses

HTL 4301	Introduction to Hotel and Restaurant Management	3
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HTL 4303		Front Office Management	3
HTL 4304		Hotel and Restaurant Law	3
HTL 4305	HTL 4306	Food Preparation 1, 2	6
HTL 4307		Food Service Engineering and Sanitation	3
HTL 4308		Food and Beverage Cost Control	3
HTL 4309		Managerial Accounting for Hospitality Industry 1	3

Nonbusiness Electives 6

Open Electives 3

Total Credits 96

Human Resources Management (Major Code 477)

Associate in Science Degree
quarter hours

Core Courses—Arts and Sciences

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3

Core Courses—Business Administration

ACC 4101	ACC 4102	Accounting Principles 1, 2	6
BL 4101		Law 1	3
MGT 4101		Introduction to Business and Management 1	3
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
FI 4301		Principles of Finance	3
IM 4301		Production Management 1	3
MKT 4301		Introduction to Marketing 1	3

Choose one computer programming course from:

MIS 4220	Introduction to Programming in COBOL	3
MIS 4240	Introduction to Programming in BASIC	3
MIS 4250	FORTRAN Programming 1	3

Major Concentration Courses

HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
HRM 4303		Applied Human Resources Management	3
HRM 4310	HRM 4311	Personnel Management 1, 2	6
HRM 4330	HRM 4331	Employment Rights 1, 2	6
HRM 4340		Public Sector Collective Bargaining	3
or		or	or
HRM 4341		Private Sector Collective Bargaining	3

Nonbusiness Electives 3

Total Credits 96

Industrial Management (Major Code 478)**Associate in Science Degree****quarter hours****Core Courses—Arts and Sciences**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
MTH 4130	MTH 4131		Calculus for Nonengineers 1, 2	6
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3

Core Courses—Business Administration

ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MGT 4101		Introduction to Business and Management 1	3
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
FI 4301		Principles of Finance	3
IM 4301		Production Management 1	3
MKT 4301		Introduction to Marketing 1	3

Choose one computer programming course from:

MIS 4220	Introduction to Programming in COBOL	3
MIS 4240	Introduction to Programming in BASIC	3
MIS 4250	FORTRAN Programming 1	3

Major Concentration Courses

IM 4310	Manufacturing Processes	3
IM 4311	Methods Analysis, Motion and Time Study	3
IM 4312	Operations Management	3
IM 4313	Cases in Industrial Management	3
IM 4315	Industrial Decision Making 1	3
IM 4317	Materials Management	3
IM 4320	Managing for Results	3

Open Electives 3**Total Credits** 96

Management Information Systems (Major Code 475)

Associate in Science Degree

quarter hours

Core Courses—Arts and Sciences				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
SPC 4101			Effective Communication 1	3
Core Courses—Business Administration				
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
MGT 4101			Introduction to Business and Management 1	3
FI 4301			Principles of Finance	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
HRM 4303			Applied Human Resources Management	3
IM 4301			Production Management 1	3
Major Concentration Courses				
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MIS 4221	MIS 4222	MIS 4223	COBOL Programming 1, 2, 3	9
MIS 4301	MIS 4302	MIS 4303	Systems Analysis and Design 1, 2, 3	9
MIS 4310			Data Systems Administration	3
Nonbusiness Electives				3
Open Electives				6
Total Credits				96

Marketing (Major Code 479)

Associate in Science Degree

quarter hours

Core Courses—Arts and Sciences				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ENG 4380			Business Writing and Reports 1	3
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
SPC 4101			Effective Communication 1	3
Core Courses—Business Administration				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
MGT 4101			Introduction to Business and Management 1	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
FI 4301			Principles of Finance	3

Major Concentration Courses

MKT 4301	MKT 4302	Introduction to Marketing 1, 2	6
MKT 4310	MKT 4311	Advertising and Sales Promotion Management 1, 2	6
MKT 4315	MKT 4316	Sales Management 1, 2	6
MKT 4320	MKT 4321	Marketing Management 1, 2	6

Nonbusiness Electives 6

Total Credits 96

Purchasing (Major Code 432)**Associate in Science Degree**

quarter hours

Core Courses—Arts and Sciences

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9

Core Courses—Business Administration

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
MGT 4101			Introduction to Business and Management 1	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
IM 4301			Production Management 1	3
MKT 4301			Introduction to Marketing 1	3

Major Concentration Courses

PUR 4351	PUR 4352	Purchasing 1, 2	6
PUR 4357		Art and Technique of Negotiation in Business	3
PUR 4358		Materials Requirement Planning	3
PUR 4459		Subcontract Management	3
IM 4314		Promotion Control and Inventory Management	3
IM 4317		Materials Management	3

Nonbusiness Electives 12

Total Credits 96

Real Estate (Major Code 471)**Associate in Science Degree****quarter hours****Core Courses—Arts and Sciences**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9

Core Courses—Business Administration

ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MGT 4101		Introduction to Business and Management 1	3
FI 4301		Principles of Finance	3
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3

Major Concentration Courses

RE 4301	RE 4302	Real Estate Fundamentals 1, 2	6
RE 4323	RE 4324	Real Estate Appraisal 1, 2	6
RE 4328	RE 4329	Real Estate Financial Analysis 1, 2	6
RE 4341	RE 4342	Real Estate Law 1, 2	6
		Department Offerings	3

Nonbusiness Electives

18

Total Credits**96****Transportation and Physical Distribution Management
(Major Code 483)****Associate in
Science Degree****quarter hours****Core Courses—Arts and Sciences**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9

Core Courses—Business Administration

ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MGT 4101		Introduction to Business and Management 1	3
FI 4301		Principles of Finance	3
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
HRM 4303		Applied Human Resources Management	3
MKT 4301		Introduction to Marketing I	3

Major Concentration Courses

TRN 4301	Elements of Transportation	3
TRN 4302	Physical Distribution Management	3
TRN 4305	Traffic Management 1	3

TRN 4307	Contemporary Issues in Transportation and Distribution	3
TRN 4316	Carrier Management	3
TRN 4321	Transportation Regulation 1	3
Nonbusiness Electives		18
Open Electives		3
Total Credits		96

Industrial Technology (Major Code 490)	Bachelor of Science Degree
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Engineering or Science Technology Courses	quarter hours
	96

(Must have completed English 1, 2, 3 or equivalent)

Core Courses—Arts and Sciences

ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3

Core Courses—Business Administration

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MGT 4101			Introduction to Business and Management 1	3
MIS 4101			Introduction to Data Processing and Information Systems 1	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
HRM 4303			Applied Human Resources Management	3
MGT 4310			Project Planning and Control	3
MKT 4301			Introduction to Marketing 1	3

Students are required to select three of the following courses for a total of 9 q.h.

IM 4312	Operations Management	3
IM 4313	Cases in Industrial Management	3
IM 4320	Managing for Results	3
MS 4336	Industrial Experimentation	3
MS 4337	Principles of Quality Assurance	3

Nonbusiness Electives	12
Total Credits	174

**Bachelor of Science in Business
Administration Degree**

Accounting (Major Code 460)

quarter hours

Core Courses—Arts and Sciences

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ENG 4380	ENG 4381		Business Writing and Reports 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
or			or	or
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
SPC 4101			Effective Communication 1	3

Core Courses—Business Administration

BL 4101	BL 4102		Law 1, 2	6
MGT 4101			Introduction to Business and Management 1	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
FI 4301			Principles of Finance	3
FI 4310			Financial Management 1	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
MKT 4301			Introduction to Marketing 1	3
IM 4301			Production Management 1	3
MGT 4350	MGT 4351		Business Policy 1, 2	6
MGT 4356			International Business Management and Operations	3

Choose one computer programming course from:

MIS 4220		Introduction to Programming in COBOL	3
MIS 4240		Introduction to Programming in BASIC	3
MIS 4250		FORTTRAN Programming 1	3

Major Concentration Courses

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
ACC 4301	ACC 4302	ACC 4303	Intermediate Accounting 1, 2, 3, 4	12
ACC 4304				
ACC 4310	ACC 4311		Cost Accounting 1, 2	6

ACC 4325		Auditing 1	3
or		or	or
ACC 4330		Internal Auditing 1	3
ACC 4340	ACC 4341	Federal Income Taxes 1, 2	6
Nonbusiness Electives			6
Open Electives			30
Elective in Natural Sciences			3
Total Credits			174

Bachelor of Science in Business Administration Degree

Management (Major Code 463)

quarter hours

Core Courses—Arts and Sciences

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ENG 4380	ENG 4381		Business Writing and Reports 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
or			or	or
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
SPC 4101			Effective Communication 1	3

Core Courses—Business Administration

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
FI 4101			Principles of Finance	3
FI 4102			Financial Management 1	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
HRM 4303			Applied Human Resources Management	3
IM 4301			Production Management 1	3
MKT 4301			Introduction to Marketing 1	3

Choose one computer programming course from:

MIS 4220	Introduction to Programming in COBOL	3
MIS 4240	Introduction to Programming in BASIC	3
MIS 4250	FORTRAN Programming 1	3

Major Concentration Courses

MGT 4101	MGT 4102	MGT 4103	Introduction to Business and Management 1, 2, 3	9
MKT 4320			Marketing Management 1	3
MGT 4310			Project Planning and Control	3
MGT 4350	MGT 4351		Business Policy 1, 2	6
MGT 4355			Manager and Society	3
MGT 4356			International Business Management and Operations	3
MGT 4360	MGT 4361		Management Seminar 1, 2	6

Nonbusiness Electives 6

Open Electives 33

Elective in Natural Sciences 3

Total Credits 174

Management Information Systems (Major Code 465)	Bachelor of Science in Business Administration Degree
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Core Courses—Arts and Sciences

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ENG 4380	ENG 4381		Business Writing and Reports 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
or			or	or
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
SPC 4101			Effective Communication 1	3

Core Courses—Business Administration

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MGT 4101			Introduction to Business and Management 1	3
MGT 4350	MGT 4351		Business Policy 1, 2	6
MGT 4356			International Business Management and Operations	3
FI 4301			Principles of Finance	3
FI 4302			Financial Management 1	3
IM 4301			Production Management 1	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3

HRM 4303	Applied Human Resources Management			3
MKT 4301	Introduction to Marketing 1			3
Major Concentration Courses				
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2		6
MIS 4221	MIS 4222	MIS 4223	COBOL Programming 1, 2, 3	9
MIS 4301	MIS 4302	MIS 4303	Systems Analysis and Design 1, 2, 3, 4	12
MIS 4304				3
MIS 4310	Data Systems Administration			3
MIS 4311	Data Processing Applications 1			3
MGT 4310	Project Planning and Control			3
MS 4330	Introduction to Operations Research			3
Open Electives				30
Elective in Natural Sciences				3
Total Credits				174



Arts and Sciences

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Aims

In providing the means to a modern liberal education, University College has the main objective of stimulating and guiding the self-development of the student in three main areas: first, intellectual growth; second, the development of a sense of values; and third, preparation for, or advancement in, a career.

Intellectual growth—the development of the ability to think independently and creatively—rests upon the foundation of a sound general education. Through the arts and sciences curricula, students are guided toward an appreciative understanding of the active discovery of ideas and methods in the areas of humanities, natural science, and social science. With this training, the student can more fully realize the basic values upon which civilization rests and can more fully participate in the intellectual, moral, and material achievement of that civilization.

Through its many programs, University College tries to provide experiences conducive to the development of personal competence and the ability to work effectively with others, which in turn foster the growth of self-esteem.

University College holds that there is no inconsistency between a truly liberal education and preparation for a vocation. As an adventure in intellectual discovery, a liberal education leads to the broadening and intensification of interests as the student becomes aware of his or her own mental strengths and weaknesses. This discovery is essential for making more intelligent and realistic appraisals of self and career. A career brings meaning and focus to the educational experience. Education presents both a challenge to accept responsibility and an opportunity to seek knowledge and skills.

Bachelor's Degrees in Ten Programs

Students have an opportunity to matriculate for a Bachelor of Arts or Bachelor of Science degree in one of ten programs. Both degrees are offered in Economics, English, Art, Political Science, History, Psychology, Sociology-Anthropology, and Music. In addition, the Bachelor of Science degree is offered in Chemical-Biological Technology and Technical Communications.

One of the distinguishing characteristics of the B.A. degree is that it includes a language requirement, whereas the B.S. degree does not. All degree programs make English 1, 2, and 3 a requisite for matriculation.

For specific distribution requirements, students are advised to consult the program or programs in which they may be interested. (All Arts and Sciences programs appear in this section.)

Certificates in Eight Areas

Students who seek specialized skills to advance their careers may choose from among the following eight humanities certificate programs, which may be taken independently or in conjunction with degree study:

- Advertising and Public Relations
- American Sign Language (ASL)
- Gerontology
- Graphic Design and Communication
- Software Technical Writing
- Song Writing
- Speech Communication
- Writing

Except for ASL, which must be taken in residence, each certificate program permits limited transfer credit. *For information about all University College certificate programs, as well as course listings for each of the above, see pages 119–127.*

Economics Degree with Finance Certificate

A new Economics degree program provides students with an opportunity to obtain a certificate in Finance while pursuing a Bachelor of Science degree in Economics. Students may now engage in a pragmatic and balanced course of study, which has gained much respect in the workplace. For program details, see page 61.

Business Administration Minor

Students who matriculate for either the Bachelor of Arts or Bachelor of Science degree in an arts and sciences program area have the option of completing a minor in business administration. Students wishing to earn a minor in business administration must utilize some of the open electives permitted in their degree programs for this purpose. Students should meet with an academic adviser from the Office of Academic and Student Affairs to identify the courses required for a minor in business. Students earning a bachelor's degree in an arts and sciences area are permitted to accumulate up to 44 quarter hours (25 percent of the credits toward a bachelor's degree) in business subjects. Any credits accumulated beyond this limit from business courses cannot be used to fulfill the graduation requirements for a B.S. degree in an arts and sciences area.

Enrichment and Skills Offerings

While the Arts and Sciences have long been perceived as disciplines rich in intellectual and cultural content (such as courses in Shakespeare, Western civilization, Beethoven, and Irish history), their relevance to current career needs are often overlooked. Students are encouraged to explore the practical side of liberal arts, which includes courses in social welfare, economics, logic, business writing, and effective speaking.

Professional Concentrations

Four traditional degree programs—English, Music, Political Science, and Sociology-Anthropology—offer professional concentrations designed to teach specialized skills and help create new career options for liberal arts students. Consult the following pages for individual program details.

Human Services	page 75
Musical Performance	page 76
Public Administration	page 70
Writing	page 62

Technology Programs

University College offers the following programs, which respond to the current need for technicians and technologists:

Chemical-Biological Technology (A.S.)	page 77
Chemical-Biological Technology (B.S.)	page 78
Technical Communications (B.S.)	page 64

The Associate in Science Degree

The program leading to the associate degree is offered for those desiring a general cultural back-

ground in arts and sciences and humanities, but who do not wish to pursue a major field of concentration for the baccalaureate degree.

Candidates for the Associate in Science degree in Arts and Sciences must complete a minimum of 96 quarter hours of credit. This is approximately one half of the requirements (174 quarter hours) for the Bachelor of Science degree.

To provide a balanced program that will achieve the established objectives, the faculty has set a minimum credit requirement in the several areas of study as listed under each major.

Distribution Requirements

For the purpose of satisfying the distribution requirements as specified under the individual Arts and Sciences majors, select from the following:

Math-Science includes only courses in biology (BIO. . .), chemistry (CHM. . .), earth science (ESC. . .), mathematics (MTH. . .), physics (PHY. . .), and psychology lab courses (PSY. . .).

Humanities includes only courses in art (ART. . .), American Sign Language (ASL. . .), English (ENG. . .), journalism (JRN. . .), library systems (LIB. . .), modern languages (LNA. . . to LNS. . .), philosophy (PHL. . .), speech communications (SPC. . .), technical communications (TCC. . .), and theater arts (DRA. . .).

Social Sciences includes only courses in economics (ECN. . .), history (HST. . .), political science (POL. . .), psychology (except laboratory courses) (PSY. . .), and sociology-anthropology (SOA. . . and SOC. . .).

English Requirement The 9 quarter hours of *required* English (ENG 4110, ENG 4111, ENG 4112, English 1, 2, 3) must be taken prior to matriculation. These are required courses that cannot be used to satisfy distribution requirements in any arts and sciences course of study.

Honors Program

An upperclass honors program is provided in University College to enable superior students to develop their potential to the highest degree by making it possible for them to pursue studies in their major fields to greater depth than is possible in the regular courses.

The nature of the program is determined by the academic department concerned. Programs may involve any of the following elements: special research projects culminating in honor theses, seminars, reading projects, directed independent study, or creative work. Flexibility is the keynote,

with every consideration given to the individual needs and requirements of the student. Honors advisers are chosen from the faculty of the department concerned in consultation with the department consultant.

Students who have earned 96 quarter hours of credit toward their bachelor's degree and who have a grade point average of 3.0 or better are eligible to apply to the appropriate Program Director of Arts and Sciences in University College for admission to the program. Acceptance as an honors candidate rests with the academic department concerned.

Acceptance of University College Credits by Northeastern's Basic College of Arts and Sciences

The College of Arts and Sciences, one of the basic (day) colleges of Northeastern University, permits its students to enroll for credit in courses in University College when they are pertinent to the student's program and have been approved by the Dean of the College of Arts and Sciences. The credits for such courses may be applied to the total number of credits needed for graduation, to satisfy distribution requirements, and/or to fulfill language and major deficiencies.

Credits from University College, as well as those from other accredited institutions, may not be applied to the quality point average of students in the College of Arts and Sciences except when such credits are from courses taken as substitutes for those College of Arts and Sciences courses failed by students. In such instances, students must receive a grade of C or better in the University College courses and then only 2.0 quality points are applied to the student's record for each course. Courses taken in University College that are not offered in the College of Arts and Sciences may be transferred with the full grade upon approval of the major department as well as the Dean of the College of Arts and Sciences.

Credit for Noncollegiate Experience (NCE)

A matriculated Arts and Sciences student with a departmental major other than Technical Communications in University College is eligible to obtain noncollegiate experience credit (NCE) for knowledge acquired in a nontraditional manner.

Whenever possible, NCE should be used as a substitute for specific Arts and Sciences courses (for example, substituting NCE in Public Speaking for SPC 4101). When a specific course is deemed critical to the academic soundness of the major,

a student may be asked to take the course but may, in addition, receive NCE credit in the subject area in which he or she has acquired special knowledge.

A maximum of nine quarter hours of NCE credit is allowed in applied and vocational areas (e.g., photography and technical writing), while up to sixteen quarter hours of NCE credit is allowed in other academic areas (e.g., sociology, philosophy, and economics).

To apply for NCE credit, a student must file a petition listing the relevant courses, reasons for which credit should be received, and if appropriate, attaching any materials that might serve as documentation.

Notification of acceptance or rejection of the petition will be issued by the Office of Academic and Student Affairs, as directed by the appropriate Arts and Sciences Program Director, with the advice of the concerned departmental consultant(s). The latter will determine whether the petitioner's NCE is equivalent to the course listings as claimed. Criteria for such evaluation may or may not include a formal examination, an interview, departmental consultation, or a request for additional documentation.

If positive action is taken on the petition, the resulting NCE credits may be applied toward a Bachelor's degree. However, students should be aware of certain constraints. To have NCE credit counted to qualify for a given June graduation, the petition must be filed at least six months prior to the commencement date. NCE cannot be used to fulfill residence requirements. NCE credit cannot be given for courses that can be accredited through the CLEP testing program at the time of the petition. Grades will not be assigned to NCE credits. It is possible that NCE credit may be applicable toward a degree in University College only.

Field Work Courses

To provide the opportunity for students to apply their academic background to practical problems, several departments have introduced courses in their curricula entitled "Field Work In. . . ."

A field work course shall have the following characteristics (as voted by the Curriculum Committee):

1. It shall be a one-quarter course worth six quarter hours of credit.
2. Only matriculated majors within the department offering the course may register.
3. The prerequisites shall be established by the department.

- 4. Each student shall make his or her own arrangements for carrying on suitable field work at a departmentally acceptable organization involving departmentally acceptable field work experience(s). The department will participate in student placement only in an advisory capacity.
- 5. Each student shall spend a minimum of fifteen hours per week at the outside organization on a volunteer or paid basis.
- 6. Each student shall meet with the departmental field work adviser as frequently as the adviser feels necessary, but in any case no fewer than three times per quarter (once to formulate the program of field work experience, once to discuss ongoing work, and once to transmit and discuss the final written report).
- 7. The student's grade shall be dependent upon both the quality of the experience as demonstrated in the final report and the discussions between the U.C. field work adviser and the outside supervisor.
- 8. Provided that one student registers, the course will not be cancelled.

9. The outside supervisor will be offered a transferrable voucher for a tuition-free course at Northeastern University.

Prior to registration, each student should consult with the major department.

Directed Study

Students may be eligible to enroll in a maximum of two Directed Study courses in the following majors: Art, English, Music, Psychology, Sociology, Anthropology, History, Political Science, and Economics. The Directed Study is intended primarily for the matriculated senior who is unable to take a course needed for graduation because of circumstances beyond his or her control (e.g., the course was not reasonably available during the student's tenure in University College). Such students should contact the program office for a petition to establish advanced student status. Please refer to course descriptions for more detailed information.

Economics (Major Code 390)

Bachelor of Arts Degree

quarter hours

Distribution Requirements

See page 58 for courses included in these categories:

Math-Science	18
Humanities	24

Social Science Requirements

Eighteen quarter hours from among the following social science disciplines: psychology, sociology/anthropology, history, political science.	18
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Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required

ECN 4115	ECN 4116	ECN 4117	Economic Principles 1, 2, 3	9
ECN 4250	ECN 4251	ECN 4252	Statistics 1, 2, 3	9
ECN 4310			Labor Economics	3
ECN 4342	ECN 4343		Money and Banking 1, 2	6
ECN 4344			Government Finance	3

Major Concentration Electives from Advanced-Level Courses: (ECN. . . Series)

27

*Electives

24

Total Credits

174

*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 146.

Economics (Major Code 390)

Bachelor of Science Degree
With Certificate in Finance

				quarter hours
Distribution Requirements				
See page 58 for courses included in the category below:				
Social Sciences (other than Economics courses).				18
Arts and Sciences Program Requirements				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Major Concentration Courses—Required				
ECN 4115	ECN 4116	ECN 4117	Economic Principles 1, 2, 3	9
ECN 4215			Macroeconomic Theory	3
ECN 4216			Microeconomic Theory	3
ECN 4250	ECN 4251	ECN 4252	Statistics 1, 2, 3	9
ECN 4310			Labor Economics	3
ECN 4342	ECN 4343		Money and Banking 1, 2	6
ECN 4344			Government Finance	3
*Finance Certificate Courses—Required				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
FI 4301			Principles of Finance	3
FI 4302	FI 4303		Financial Management 1, 2	6
FI 4305			Investment Principles	3
**Major Concentration from Advanced-Level Courses: (ECN. . . Series)				21
Electives in Arts and Sciences				45
Open Electives				24
Total Credits				174

*For details about certificate program, see page 123.

**Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 146.

English (Major Code 330)

Bachelor of Arts Degree

				quarter hours
Distribution Requirements				
See page 58 for courses included in the categories listed below:				
Math-Science				18
Social Sciences				24
Arts and Sciences Program Requirements				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Core Major Courses—All Courses Required

ENG 4120		English Literature to 1700	3
ENG 4121		English Literature: Reason and Romanticism	3
ENG 4122		English Literature: Victorians and Moderns	3
ENG 4123		Early American Literature: Faith, Reason, and Nature	3
ENG 4124		American Romantics and American Realists	3
ENG 4125		American Literature: The Modern Temper	3
ENG 4126		The Ancient and Medieval Worlds	3
ENG 4127		From Renaissance to Romanticism	3
ENG 4128		From Realism to Modern Literature	3
ENG 4349	ENG 4350	Expository and Persuasive Writing 1, 2	6
ENG 4352		Expository Communications	3
ENG 4602		Major Figures in Poetry	3
ENG 4603		Major Figures in Fiction	3
ENG 4658		Shakespeare the Dramatist	3

Select One of Two Concentrations:

I. Literature Elective Concentration—Nine Courses 27

Select nine courses from the ENG 4200 or ENG 4600 series from the English Course Descriptions on pages 148–150 of this *Bulletin*.

II. Writing Elective Concentration—Nine Courses 27

Select six courses from the ENG 4300 or ENG 4500 series from the English Course Descriptions on pages 148–149, and three courses from either the JRN or TCC courses on pages 164–165 and 205–206.

English Electives (may include ENG 4802, ENG 4803, ENG 4804, Honors Programs 1, 2, 3) 9

Special arrangements may be made to take ENG 4800 and ENG 4801, Directed Studies 1 and 2, to substitute for an upper-level concentration requirement when the course(s) is not available on a regularly scheduled basis. Consult course descriptions for details.

Open Electives 18

Total Credits 174

English (Major Code 330) Bachelor of Science Degree

Unless otherwise stated, requirements are the same as for the B.A. degree, except:	
Modern Language	None
Open Electives	42



Technical Communications (Major Code 380)

Bachelor of Science Degree

The Bachelor of Science degree in Technical Communications is available to students who have acquired an Associate in Science degree or its equivalent (including the completion of English 1, 2, and 3) while maintaining a 2.0 grade point average. Once a student has had sufficient training in Technical Communications, a cooperative job placement option will be made available to him/her through the University College Cooperative Education Program.

Distribution Requirements for the B.S. Degree		quarter hours
A.S. degree or its equivalent		84–96
Core Communications courses		24
Core Technology courses		29
Specialized Communications courses		21
Cooperative		6
Open electives		12
To equal		176–188

A. Core Communications Courses—Required

ART 4140		Graphics Communication and Production	3
ENG 4349	ENG 4350	Expository and Persuasive Writing 1, 2	6
JRN 4112		Fundamentals of Newswriting	3
LIB 4325		Business Research Tools	3
PHL 4100		Philosophy: Methods and Values	3
PHL 4200		Introduction to Logic	3
SPC 4152		Interviewing	3

B. Core Technology Courses—Required

MTH 4081	MTH 4082	Introduction to Math 1, 2	8
MTH 4083		Applied Math and Statistics	3
TCC 4350	TCC 4351	Concepts of Modern Technology 1, 2	6
TCC 4352		Measurement and Analysis	3
TCC 4353		Modern Electronics	3
TCC 4354		Theory and Operation of Computers	3

Select one of the following:

MIS 4220		Introduction to Programming in COBOL	3
MIS 4240		Introduction to Programming in BASIC	3
MIS 4250		FORTRAN Programming 1	3
MIS 4270		PASCAL Programming 1	3

C. Specialized Communications Courses—Required

TCC 4101	TCC 4102	Technical Writing 1, 2	6
TCC 4105		Editing for Science and Technology	3

Select four of the following:

TCC 4301	TCC 4302	Computer Software Technical Writing 1, 2	6
TCC 4311	TCC 4312	Hardware Technical Manual Writing 1, 2	6
TCC 4320		Proposal Writing	3
TCC 4330		The Business and Technical Presentation	3

D. Cooperative Work Experience

6

An option for eligible students. For details call 617-437-2428.

E. Open Electives

12

It is suggested that students select open electives from among the following courses to reflect individual interest:

ACC 4101	ACC 4102	Accounting Principles 1, 2	6
ART 4364		Design and Production of Promotional Publications	3
ART 4365		Design and Production of Technical Publications	3
ENG 4352		Expository Communications	3
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6

Recommended Course Sequence

For maximum learning benefit, students are encouraged to undertake studies in the following sequence, adjusting length of study to course load (e.g., students taking two courses per quarter will take two years to complete First Year Sequence, or less than two years if study in the Summer quarter is elected). Assistance for such decisions may be obtained by contacting the Department of Career and Academic Counseling at 617-437-2400.

First Year Sequence*Fall Quarter*

MTH 4081	Introduction to Math 1
PHL 4100	Philosophy: Methods and Values
SPC 4152	Interviewing
TCC 4350	Concepts of Modern Technology 1

Winter Quarter

ENG 4349	Expository and Persuasive Writing 1
MTH 4082	Introduction to Math 2
PHL 4200	Introduction to Logic
TCC 4352	Concepts of Modern Technology 2

Spring Quarter

ENG 4350	Expository and Persuasive Writing 2
JRN 4112	Fundamentals of Newswriting
MTH 4083	Applied Math and Statistics
TCC 4352	Measurement and Analysis

Second Year Sequence*Fall Quarter*

ART 4140	Graphics Communication and Production
TCC 4101	Technical Writing 1
TCC 4353	Modern Electronics Open Elective

Winter Quarter

LIB 4325	Business Research Tools
TCC 4102	Technical Writing 2
TCC 4354	Theory and Operation of Computers Open Elective

Spring Quarter

MIS 4111	Computer Language Elective
TCC 4105	Editing for Science and Technology
TCC 4330	The Business and Technical Presentation Open Elective

Third Year Sequence*Fall Quarter*

TCC 4301	Computer Software Technical Writing 1
TCC 4311	Hardware Technical Manual Writing 1
TCC 4320	Proposal Writing Open Elective

Winter Quarter

TCC 4302	Computer Software Technical Writing 2
TCC 4312	Hardware Technical Manual Writing 2 University College Cooperative

Spring Quarter

	University College Cooperative
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Fine Arts (Major Code 327)

Bachelor of Arts Degree

quarter hours

Distribution Requirements

See page 58 for courses included in these categories listed below:

Math-Science	18
Social Science	24

Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required

ART 4100	History of Art	3
ART 4101	History of Art to the Sixteenth Century	3
ART 4102	History of Art to the Twentieth Century	3
ART 4106	Introduction to Art	3

In addition, the major requires a minimum of 39 quarter hours from the Fine Arts courses numbered ART 4106–4138, 4204–4229, 4255, 4311, and 4312. These courses are described on pages 134–137.

39

Electives

48

Total Credits

174

Special arrangements may be made to take ART 4800 and ART 4801, Directed Studies 1 and 2, to substitute for an upper-level concentration requirement when the course(s) is not available on a regularly scheduled basis. Consult course descriptions for details.

Fine Arts (Major Code 327)

Bachelor of Science Degree

quarter hours

Distribution Requirements

See page 58 for courses included in these categories listed below:

Math-Science	18
Social Science	24

Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
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Major Concentration Courses—Required

ART 4100	History of Art	3
ART 4101	History of Art to the Sixteenth Century	3
ART 4102	History of Art to the Twentieth Century	3
ART 4106	Introduction to Art	3

In addition, the major requires a minimum of 39 quarter hours from the Fine Arts courses numbered ART 4106–4138, 4204–4229, 4255, 4311, and 4312. These courses are described on pages 134–137.

39

Electives

72

Total Credits

174

Special arrangements may be made to take ART 4800 and ART 4801, Directed Studies 1 and 2, to substitute for an upper-level concentration requirement when the course(s) is not available on a regularly scheduled basis. Consult course descriptions for details.

History (Major Code 323)**Bachelor of Arts Degree****quarter hours****Distribution Requirements**

See page 58 for courses included in these categories listed below:

Math-Science	18
Humanities	24

Social Science Requirements

Eighteen quarter hours from at least three of the following disciplines:

economics, political science, psychology, sociology/anthropology.	18
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Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required

HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
HST 4241			The Historian's Craft	3
HST 4304			History of Energy	3
HST 4430			European Social and Economic History to 1000	3
HST 4431			European Social and Economic History, 1000–1648	3
HST 4443			European Intellectual History Since 1815	3
HST 4502			Colonial America	3
HST 4540			American Social History	3
HST 4611			Africa Since 1885	3
HST 4632			China Since 1850	3

*Electives	36
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Total Credits	174
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*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 162.

History (Major Code 323)**Bachelor of Science Degree****quarter hours****Distribution Requirements**

See page 58 for courses included in the category below:

Humanities	24
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Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
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Major Concentration Courses—Required

HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
HST 4241			The Historian's Craft	3
HST 4301			Technological Transformation of Society	3
HST 4304			History of Energy	3
HST 4430			European Social and Economic History to 1000	3

HST 4431	European Social and Economic History, 1000–1648	3
HST 4433	Population in History	3
HST 4443	European Intellectual History Since 1815	3
HST 4502	Colonial America	3
HST 4530	American Economic History	3
HST 4540	American Social History	3
HST 4611	Africa Since 1885	3
HST 4632	China Since 1850	3

Social Science Requirements

History majors are required to select two of the following course sequences for a total of 18 q.h.

ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOA 4100	SOA 4101	SOA 4102	Anthropology 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3

Other Required Courses

MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
SOC 4321	SOC 4322	SOC 4323	Social Research Methods 1, 2, 3	12

***Electives** 51

While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.

Total Credits 174

*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 162.

Arts and Sciences (Major Code 372)

Associate in Science Degree

quarter hours

Distribution Requirements

See page 58 for courses included in the categories listed below:

Math-Science				18
Humanities				24
Social Sciences				24

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
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Electives 21

Total Credits 96

Political Science (Major Code 322)**Bachelor of Arts Degree****quarter hours****Distribution Requirements**

See page 58 for courses included in these categories listed below:

Math-Science—any combination of courses	18
Humanities	<u>24</u>
	42

Social Science RequirementsEighteen quarter hours from at least three of the following social science disciplines:
economics, psychology, sociology/anthropology, history.**18****Arts and Sciences Program Requirements**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	<u>12</u>
				33

Courses Required for Major

Prerequisites		
POL 4103	Introduction to Politics	3
POL 4104	Introduction to American Government	3
POL 4105	Introduction to Comparative Government	<u>3</u>
		9

Upperclass Courses—Required

American Government (any three American Government courses)	9
Comparative Government (POL 4330, Comparative Politics Intensive required, 4 q.h.;	
one other Comparative Government course, 3 q.h.)	7
International Relations (POL 4331, International Relations required, 4 q.h.;	
one other International Relations course, 3 q.h.)	7
Theory and Methodology (POL 4370, Intro. to Political Theory required, 4 q.h.;	
one other Theory or Methodology course, 3 q.h.)	<u>7</u>
	30

Political Science ElectivesSelect any combination of six additional Political Science courses. **18****Open Electives*** **24****Total Credits** **174**

*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 193.

Political Science (Major Code 322)

Bachelor of Science Degree

quarter hours

Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
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Courses Required for Major

Prerequisites				
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
				9

Upperclass Courses—Required

American Government (any three American Government courses)				9
Comparative Government (POL 4330, Comparative Politics Intensive required, 4 q.h.;				
one other Comparative Government course, 3 q.h.)				7
International Relations (POL 4331, International Relations required, 4 q.h.;				
one other International Relations course, 3 q.h.)				7
Theory and Methodology (POL 4370, Intro. to Political Theory required, 4 q.h.;				
one other Theory or Methodology course, 3 q.h.)				7
				30

Political Science Electives

Select from page 69: may include maximum number of q.h. for Honors and Directed Study.	18
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Additional Requirements

ECN 4250	ECN 4251	ECN 4252	Statistics 1, 2, 3	
or			or	9
MIS 4101	MIS 4102		Introduction to Data Processing and Information	
			Systems 1, 2	6
MIS 4220			Introduction to COBOL Programming	3
				9

Social Science Requirements

Must include not fewer than 6 q.h. from each of three different social science disciplines selected from economics, history, psychology, and sociology/anthropology, other than political science.	18
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Humanities	9
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Open Electives*	72
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Total Credits	174
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*See Optional Public Administration concentration below.

Optional Public Administration Concentration (open only to B.S. degree candidates)

quarter hours

Required courses:				
POL 4300	Public Administration 1			3
POL 4301	Public Administration 2			3
POL 4311	American Political Thought			3
POL 4310	Research Methods			3
				12

Two of the following:

POL	4303	Public Personnel Administration	3
POL	4304	Public Budgeting	3
POL	4305	Organizational Theory	3
			6

Seven of the following:

POL	4306	Public Policy Analysis	3
POL	4313	Government and Politics of the State	3
POL	4314	Urban Metropolitan Government	3
POL	4318	American Presidency	3
POL	4320	American Constitutional Law	3
POL	4321	Civil Rights	3
POL	4322	Procedural Due Process	3
POL	4332	International Organization	3
POL	4375	Consumer Advocacy	3
POL	4378	Current Political Issues	3
			21

One Political Science Elective	3
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Total Credits	42
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Psychology (Major Code 319)	Bachelor of Arts Degree
	quarter hours

Distribution Requirements

See page 58 for courses included in these categories:

Math-Science	18
Humanities	24

Social Science Requirements

Eighteen quarter hours from at least three of the following social science disciplines: political science, sociology/anthropology, history, economics.	18
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Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required*

Students planning to continue their education beyond the B.A. or B.S. are encouraged to take Scientific Foundations of Psychology 1 and 2 (PSY 4410 and PSY 4411).

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
PSY 4220	PSY 4221	PSY 4222	Statistics in Psychology 1, 2, 3	9
PSY 4611			Senior Seminar	3

Three of the following pairs—Required

PSY 4231	PSY 4531	Learning 1, 2 (Lab) (6)	
PSY 4272	PSY 4572	Personality 1, 2 (Lab) (6)	
PSY 4351	PSY 4551	Physiological Psychology 1, 2 (Lab) (6)	
PSY 4381	PSY 4581	Sensation & Perception 1, 2 (Lab) (6)	18

Psychology Electives (PSY . . . Series) 21

Open Electives 21

While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.

Total Credits 174

*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 196.

Psychology (Major Code 319)	Bachelor of Science Degree
	quarter hours

Distribution Requirements

See page 58 for courses included in this category:

Math-Science 33

Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
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Major Concentration Courses—Required*

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
PSY 4220	PSY 4221	PSY 4222	Statistics in Psychology 1, 2, 3	9
PSY 4231	PSY 4531		Learning 1, 2 (Lab)	6
PSY 4272	PSY 4572		Personality 1, 2 (Lab)	6
PSY 4351	PSY 4551		Physiological Psychology 1, 2 (Lab)	6
PSY 4381	PSY 4581		Sensation and Perception 1, 2 (Lab)	6
PSY 4611			Senior Seminar	3

Psychology Electives 15

Open Electives 72

Students planning to continue their education beyond the B.A. or B.S. are encouraged to take Scientific Foundations of Psychology 1 and 2 (PSY 4110 and PSY 4111).

Total Credits 174

*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 196.

Sociology-Anthropology (Major Code 321)

Bachelor of Arts Degree

quarter hours

Distribution Requirements

See page 58 for courses included in these categories:

Math-Science	18
Humanities	24

Social Science Requirements

Eighteen quarter hours from at least three of the following social science disciplines: psychology, political science, history, economics.	18
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Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required*

Core Courses:

SOA 4100	SOA 4101	SOA 4102	Anthropology 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
or			or	or
SOC 4103			Introduction to Sociology (Intensive)	9
SOC 4300	SOC 4301	SOC 4302	Social Theory 1, 2, 3	9
or			or	or
SOC 4303			Social Theory (Intensive)	9
SOC 4321	SOC 4322	SOC 4323	Social Research Methods 1, 2, 3	12

Sociology-Anthropology Electives

21

At least 9 q.h. must be in anthropology (see pages 199–200). Students may take any combination of Honors and Field Work totaling three courses.

Open Electives

21–22

Total Credits

174

*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 204.

Sociology-Anthropology (Major Code 321)

Bachelor of Science Degree
quarter hours

Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
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Distribution Requirements

See page 58 for courses included in the categories below:				
Social Sciences (other than Sociology-Anthropology)				18

Major Concentration Courses—Required*

Core Courses:				
SOA 4100	SOA 4101	SOA 4102	Anthropology 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
or			or	
SOC 4303			Introduction to Sociology (Intensive)	9
SOC 4300	SOC 4301	SOC 4302	Social Theory 1, 2, 3	9
or			or	or
SOC 4303			Social Theory (Intensive)	9
SOC 4321	SOC 4322	SOC 4323	Social Research Methods 1, 2, 3	12

Sociology-Anthropology Electives

39

At least 9 q.h. must be in anthropology (see pages 199–200). Students may take any combination of Honors and Field Work totaling three courses.

Open Electives**

69–70

While students may elect courses in their major fields in excess of the minimum requirements, B.S. students especially are strongly encouraged to elect courses in math-science and the humanities to achieve adequate educational breadth.

Total Credits

174

*Students may be eligible to enroll in Honors and/or Directed Study courses. Please refer to page 204.

**See Human Services Elective Concentration on following page.

Human Services Elective Concentration

quarter hours

Students majoring in the B.S. degree in Sociology-Anthropology may also pursue a concentration in Human Services.

Required Courses

SOC 4125			Social Problems	3
SOC 4240			Sociology of Human Service Organizations	3
SOC 4241			Human Service Professions	3
SOC 4245			Poverty and Inequality	3
SOC 4260	SOC 4261	SOC 4262	Introduction to Social Work Practice 1, 2, 3	9
SOC 4324			Evaluation of Social Intervention	3

Additional Requirements

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
PSY 4372	PSY 4373	PSY 4374	Abnormal Psychology 1, 2, 3	9

Total Credits

42

Human Services Concentration students are encouraged to consider selecting electives from among the following courses:

ECN 4130			Medical Economics	
ECN 4311			Manpower and Anti-Poverty Policies and Programs	
ECN 4315			Poverty and Discrimination	
POL 4300	POL 4301		Public Administration 1, 2	
POL 4306			Public Policy Analysis	
POL 4321			Civil Rights	
PSY 4240			Developmental Psychology: Infancy and Children	
PSY 4241			Developmental Psychology: Adolescence	
PSY 4242			Developmental Psychology: Adulthood and Old Age	
PSY 4272			Personality	
SOC 4170			Race and Ethnic Relations	
SOC 4185			Sociology of Deviant Behavior	
SOC 4186			Social Control	
SOC 4190			Juvenile Delinquency	
SOC 4215			Medical Sociology	
SOC 4220			Sociology of Mental Health	
SOC 4225			Social Gerontology: The Aged in Society	

Music (Major Code 328)

Bachelor of Arts Degree

quarter hours

Distribution Requirements

See page 58 for courses included in these categories:

Math-Science	18
Social Sciences	24

Arts and Sciences Program Requirements

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Core Major Courses—All Required

MUS 4201			Fundamentals of Music Theory 1	4
MUS 4202	MUS 4203		Music Theory 2, 3	8
MUS 4241	MUS 4242	MUS 4243	Piano Class 1, 2, 3 (or advanced level, if qualified)	9
MUS 4301			Form and Analysis	3

Select One of Two Concentrations:

I. Musical Performance Concentration

MUS 4175	Music Teaching in Studio and Classroom	3
MUS 4250	Conducting I	3
Music History	Select Two Periods	6
Applied Music	Depending on level of musical competency,* select either three chamber groups, master, or ensemble classes, or instrument tutorials.	9

II. Music History Concentration—All Required

MUS 4112	Jazz: Evolution and Essence	3
MUS 4121	Medieval and Renaissance	3
MUS 4122	Music of the Baroque	3
MUS 4123	Music History of the Classical Period	3
MUS 4124	Music History of the Romantic Era	3
MUS 4125	Music History of the Twentieth Century	3
MUS 4134	The World of Opera	3

Music Concentration Electives	15
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Open Electives	39
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Total Credits	174
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*To determine level, contact Edgar Weiss in 307 Ell Center.

Music (Major Code 328)

Bachelor of Science Degree

Unless otherwise stated, requirements are the same as for the B.A. degree except:	
Modern Language	None

Humanities Electives (other than music courses)	15
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Open Electives	48
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Total Credits	174
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Chemical-Biological Technology (Major Code 803)**Associate in Science Degree**

The program in Chemical-Biological Technology helps provide the chemistry and biology foundation required by medical and industrial laboratory assistants and technicians in clinically, chemically, or biologically oriented organizations, and for persons having paramedical responsibilities. Employment opportunities are in hospitals, health clinics, research foundations, chemical and drug industries, public health organizations, water and sanitation departments, and in the emerging fields of the oceanographic technologies.

Prerequisite: Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics 1 and 2 courses (MTH 4001 and MTH 4002). The Mathematics Placement Test must be taken prior to registration.

Note: Associate degree graduates may transfer applicable credits toward the requirements in Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degrees, as well as University College programs.

quarter hours**First Year**

MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
or			or	or
MTH 4107	MTH 4108		College Algebra and Introduction to Calculus	8
PHY 4104	PHY 4105	PHY 4106	General Physics 1, 2, 3	6
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9

Second Year

MTH 4116	MTH 4117	MTH 4118	Probability and Statistics 1, 2, 3	6
or			or	or
MTH 4120	MTH 4121		Calculus 1 and Calculus A	8
			Social Science Electives (3)	9
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12

Third Year

CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
or			or	or
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	9
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
			Humanities Electives (3)	9

Fourth Year

BIO 4190	BIO 4191	BIO 4192	Microbiology 1, 2, 3	
			Chemistry or Biology Electives	9
			(as needed to complete total credits)	

Total Credits**96-100**

Chemical-Biological Technology (Major Code 804)**Bachelor of Science Degree**

The Chemical-Biological Technology program is an interdisciplinary program integrating theoretical and laboratory course sequences from the fields of chemistry and biology, which gives the opportunity for the student to prepare to assume responsibilities in laboratory careers that emphasize laboratory application and teaching careers in general science. Employment opportunities may be found in a wide variety of industrial, pharmaceutical, clinical, and hospital laboratories dealing with analytical, production, and research functions, and in secondary school education in the teaching of general science, chemistry, biology, and other related courses.

Prerequisite: Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics 1 and 2 courses (MTH 4001 and MTH 4002). The Mathematics Placement Test must be taken prior to registration.

General Science Teacher Option—Students planning to apply to the University's graduate Boston-Bouvé College of Human Development Professions must include courses in Adolescent Psychology and Principles of Teaching among the electives.

				quarter hours
First Year				
MTH 4110	MTH 4111	MTH 4112	Mathematics 1, 2, 3	9
or			or	or
MTH 4107	MTH 4108		College Algebra and Introduction to Calculus	8
PHY 4104	PHY 4105	PHY 4106	General Physics 1, 2, 3	6
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
Second Year				
MTH 4116	MTH 4117	MTH 4118	Probability and Statistics 1, 2, 3	6
or			or	or
MTH 4120	MTH 4121		Calculus 1 and Calculus A	8
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
Third Year				
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	9
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
Fourth Year				
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
BIO 4190	BIO 4191	BIO 4192	Microbiology 1, 2, 3	9

Fifth Year

BIO 4350	BIO 4351	BIO 4352	Histology-Organology 1, 2, 3	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles 1, 2, 3	9
CHM 4321	CHM 4322		Instrumental Analysis 1, 2	6
CHM 4323			Radiochemistry	3
ESC 4215	ESC 4216	ESC 4217	Oceanology 1, 2, 3	9
or			or	or
{ESC 4330	ESC 4331		{Fisheries Oceanology 1, 2	{6
{ESC 4332			{Marine Resources	{3

Sixth Year

BIO 4224	BIO 4225	BIO 4226	Ecology 1, 2, 3	9
CHM 4381	CHM 4382	CHM 4383	Physical Chemistry 1, 2, 3	9
or			or	or
CHM 4371	CHM 4372	CHM 4373	Biochemistry 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3

Seventh Year

BIO 4235	BIO 4236		Genetics 1, 2	6
or			or	or
BIO 4246	BIO 4247		Cell Biology 1, 2	6
BIO 4237			Genetics Lab	2
or			or	or
BIO 4248			Cell Biology Lab	2
			Electives as needed to complete total credits	

Total Credits**175–178**



Law Enforcement

Director, Law Enforcement Programs
Telephone 617-437-3324

Aims

Law Enforcement programs of study are offered to help meet the needs of present and potential practitioners in the fields of Corrections, Law Enforcement, and Security who wish to have the opportunity to acquire a liberal education as well as professional competence or to gain recognition for development and attainment while pursuing a career in that profession. Classes are tailored to suit the shifting tours of duty of many of its students, with the result that day and evening students meet on common ground. These students reflect broad differences in age, as well as in occupation, goals, race, and religion.

Programs

The distribution requirements, including certain required courses, are shown with each curriculum. Upon petition, students may be permitted under certain circumstances to substitute other courses that will more adequately serve their specific objectives.

To provide a balanced program that will achieve the established objectives, the faculty has set minimum requirements in the areas of study outlined on the following pages.

Bachelor of Science Degree Program Major fields of study are offered in Correctional Practices, Law Enforcement, and Security. Students should choose their major field of study in consultation with a program adviser.

Each curriculum provides for not less than 174 quarter hours of work, including at least 75 quarter hours of advanced work in a major field.

No student who has transferred from another institution is eligible to receive a degree until at least 45 quarter hours of academic work have been completed at University College of Northeastern University immediately preceding graduation.

Associate in Science Degree Program The program leading to the associate degree is offered for those who wish to obtain a general background in Correctional Practices, Law En-

forcement, or Security and who later may wish to pursue a major field of concentration for the baccalaureate degree.

Candidates for the Associate in Science degree must complete a minimum of 96 quarter hours of credit. This is approximately one half of the requirements for the Bachelor of Science degree and includes at least 48 quarter hours of work in a major field.

Honors Program The Honors Program in the field of Law Enforcement is designed to provide qualified students with the opportunity to achieve a broader and deeper intellectual academic experience within their chosen fields: Corrections, Law Enforcement, or Security.

In general, the Honors Program consists of the following areas: independent study, directed reading seminar, independent research projects, and special seminars.

The particular academic structure of a student's Honors Program will be arranged in consultation with the Program Director and the Honors Faculty Committee.

The Honors Program is open to all matriculated Law Enforcement Program students in University College who have obtained an associate degree or equivalent and a minimum cumulative grade point average of 3.0. Students who are eligible for this program may apply for admission and approval to the Director of Law Enforcement Programs.

For course numbers, see page 172.

Credit for Noncollegiate Experience (NCE)— Advanced Standing Credit

A matriculated University College student with a department major in Corrections, Law Enforcement, or Security may obtain up to 18 quarter hours of credit (excluding CLEP) by petitioning to take a comprehensive examination in the specific subject area based upon the student's knowledge acquired in a nontraditional manner. Petitions for these examinations may be obtained in 102 Churchill Hall or from the Director of Law Enforcement Programs.

In no case will this credit be considered as partial fulfillment of the residence requirement or will a letter grade be assigned.

No credit will be assigned in this manner for courses that can be accredited through the CLEP or PEP Testing Programs at the time of the petition. Credit will be assigned only to specific courses. It is possible that this credit may be applicable toward a degree in University College only.

Course Sequence

Upon completion of the required courses for matriculation, the student should elect courses from the Core and Major Concentration areas in fulfilling the requirement for the Associate in Science and the Bachelor of Science degrees.

The completion of degree requirements may be accomplished at the student's own pace. A total of 32 courses is required for an associate in science degree, which can be completed over a period of three years, or nine academic quarters. A bachelor of science degree can be completed over a period of five years, or fifteen academic quarters. This schedule will average out to four courses per academic quarter.

Refer to page 19, Academic Policies/Maximum Course Load.

Intensive Courses Many courses are frequently offered as single-quarter intensives during the regular school year. Please refer to the listing of courses on pages 171–172.

Intensive courses offer students the opportunity to achieve their objectives in a shorter period of time.

Distribution Requirements For the purpose of satisfying the distribution requirements in all Law Enforcement programs, students should discuss their academic programs with an academic adviser before attempting to undertake their programs of study.

Courses ENG 4110, ENG 4111, ENG 4112, English 1, 2, 3 (9 quarter hours), must be taken by each student prior to matriculation. (Refer to page 19 regarding matriculation.) The remaining required courses, amounting to 33–36 quarter hours, should be taken from the distribution of the Basic Required, Core Required, and Major Concentration Courses as listed on the following pages.

Field Work Courses Field Work Courses provide an opportunity for students to apply their academic background to practical experience in the areas of Law Enforcement, Corrections, and Security. Course is numbered as LEN 4899.

A field work course shall comprise the following characteristics:

1. A one-quarter course worth six quarter hours of credit.
2. Only matriculated majors may register.
3. Prior to registration, each student should consult with the Program Director.
4. Each student shall meet with the departmental field work adviser as frequently as the adviser feels necessary, but in any case no fewer than three times per quarter (once to formulate the program of field work experience, once to discuss ongoing work, and once to transmit and discuss the written report).
5. Each student shall spend a minimum of fifteen hours per week at the outside agency on a volunteer or paid basis.
6. The student's grade shall be dependent upon both the quality of the experience as demonstrated in the final report and the discussions between the U.C. field work adviser and the outside supervisor.
7. Each student shall make his or her own arrangements for carrying on suitable field work at a departmentally acceptable agency involving field work experience.
8. The Program Director will participate in a student's placement solely in an advisory capacity.

Law Enforcement**quarter hours**

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
LEN 4100	LEN 4101		Criminal Investigation and Case Preparation 1, 2	6
LEN 4110	LEN 4111		Introduction to Criminalistics 1, 2	6
LEN 4132	LEN 4133		Administration of Justice 1, 2	6
LEN 4136	LEN 4137		Criminal Law 1, 2	6
LEN 4149	LEN 4150	LEN 4151	Logical and Ethical Foundations of Decision Making 1, 2, 3	9

Correctional Practices

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
LEN 4115	LEN 4116		Correctional Administration 1, 2	6
LEN 4112			The American Correctional System	3
LEN 4315	LEN 4316		Criminology 1, 2	6
LEN 4132	LEN 4133		Administration of Justice 1, 2	6
LEN 4136	LEN 4137		Criminal Law 1, 2	6
LEN 4149	LEN 4150	LEN 4151	Logical and Ethical Foundations of Decision Making 1, 2, 3	9

Security

ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
POL 4320			American Constitutional Law	3
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6
LEN 4100	LEN 4101		Criminal Investigation and Case Preparation 1, 2	6
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
LEN 4132	LEN 4133		Administration of Justice 1, 2	6
LEN 4136	LEN 4137		Criminal Law 1, 2	6
LEN 4144	LEN 4145		Security Administration 1, 2	6

Correctional Practices (Major Code 944)

Bachelor of Science Degree

quarter hours

Basic Courses—Required

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
LEN 4326	LEN 4327		Law Enforcement Mathematics 1, 2	6
or			or	or
ACC 4101	ACC 4102		Accounting Principles 1, 2	6

Core Courses—Required

SOC 4186			Social Control	3
SOC 4125			Social Problems	3
LEN 4149	LEN 4150	LEN 4151	Logical and Ethical Foundations of Decision Making 1, 2, 3	9
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3

Core Electives

Select 33 quarter hours from the following:

PSY 4270	PSY 4271		Social Psychology 1, 2	6
PSY 4372	PSY 4373	PSY 4374	Abnormal Psychology 1, 2, 3	9
SOA 4100	SOA 4101	SOA 4102	Anthropology 1, 2, 3	9
SOC 4170			Race and Ethnic Relations	3
SOC 4245			Sociology of Inequality	3
SOC 4147			Urban Sociology	3
POL 4310			American Political Thought	3
POL 4312			Political Parties and Pressure Groups	3
POL 4320			American Constitutional Law	3
POL 4321			Civil Rights	3
POL 4300	POL 4301		Public Administration 1, 2	6
POL 4322			Procedural Due Process	3
POL 4335			Formulating American Foreign Policy	3
POL 4375	POL 4376	POL 4377	Consumer Advocacy 1, 2, 3	9
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
ASL 4101	ASL 4102		American Sign Language 1, 2	8
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9

Major Concentration Courses—Required

LEN 4300		Human Rights in Corrections	3
LEN 4302		Correctional Counseling	3
LEN 4305	LEN 4306	Advanced Correctional Practices 1, 2	6
LEN 4112		The American Correctional System	3
LEN 4312	LEN 4313	Treatment of Offenders 1, 2	6
LEN 4115	LEN 4116	Correctional Administration 1, 2	6
LEN 4315	LEN 4316	Criminology 1, 2	6
LEN 4317	LEN 4318	Probation and Parole Practices 1, 2	6
LEN 4132	LEN 4133	Administration of Justice 1, 2	6
LEN 4136	LEN 4137	Criminal Law 1, 2	6

Elective Major Concentration Courses

A total of 36 quarter hours from the following courses. Not more than 18 quarter hours of seminar courses may be elected to satisfy this requirement.

LEN 4301		Basic Statistics in Law Enforcement	3
LEN 4307		The Law and Institutional Treatment	3
LEN 4308		Comparative Correctional Systems	3
LEN 4309	LEN 4310	Law Enforcement Identification and Records 1, 2	6
LEN 4113	LEN 4114	Social Deviance 1, 2	6
LEN 4119		Delinquency Prevention	3
LEN 4120	LEN 4121	Juvenile Corrections 1, 2	6
LEN 4126		Seminar in Correctional Practices	3
LEN 4324		National Law Enforcement Seminar	3
LEN 4325		Hospital Security	3
LEN 4328		Seminar in L.E.—Youth Crime Control	3
LEN 4128		Seminar in L.E.—Victimology	3
LEN 4329		Seminar in L.E.—International Crime Control	3
LEN 4345		Seminar in L.E.—Grantsmanship	3
LEN 4330		Seminar in L.E.—Operational Intelligence	3
LEN 4331		Seminar in L.E.—Collective Bargaining	3
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
LEN 4335		Seminar in L.E.—Organized Crime	3
LEN 4336		Seminar in L.E.—Minorities and the Urban Crisis	3
LEN 4129		Seminar in L.E.—Criminal Behavior	3
LEN 4339		Seminar in L.E.—Intervention Strategies	3
LEN 4130		Seminar in L.E.—Drugs	3
LEN 4342		Seminar in L.E.—Executive Development	3
LEN 4343		Seminar in L.E.—Mental Health and the Police	3
LEN 4131		Seminar in L.E.—Data Processing	3
LEN 4134	LEN 4135	Civil Law in Criminal Justice 1, 2	6
LEN 4138	LEN 4139	Evidence and Court Procedure 1, 2	6
LEN 4140	LEN 4141	Fire Investigation and Arson 1, 2	6
LEN 4344		Law Enforcement Fiscal Management	3
LEN 4142		Massachusetts Criminal Law	3
LEN 4143		Alcohol Problems in Law Enforcement	3
LEN 4152		Domestic Violence	3
LEN 4899		Field Work in Law Enforcement Correctional Practices and Security	6

Total Credits**174**

Additional department offerings on selections of intensive courses appear on pages 171–172.

Correctional Practices (Major Code 945)**Associate in Science Degree****quarter hours****Basic Courses—Required**

SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9

Core Courses—Required

LEN 4149	LEN 4150	LEN 4151	Logical and Ethical Foundations of Decision Making 1, 2, 3	9
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Core Electives

A total of 21 quarter hours from the following courses:

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
PSY 4270	PSY 4271		Social Psychology 1, 2	6
PSY 4372	PSY 4373	PSY 4374	Abnormal Psychology 1, 2, 3	9
SOC 4186			Social Control	3
SOC 4125			Social Problems	3
SOC 4147			Urban Sociology	3
SOC 4170			Race and Ethnic Relations	3
POL 4310			American Political Thought	3
POL 4312			Political Parties and Pressure Groups	3
POL 4320			American Constitutional Law	3
POL 4321			Civil Rights	3
POL 4300	POL 4301		Public Administration 1, 2	6
POL 4322			Procedural Due Process	3
POL 4335			Formulating American Foreign Policy	3
POL 4375	POL 4376	POL 4377	Consumer Advocacy 1, 2, 3	9
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
ASL 4101	ASL 4102		American Sign Language 1, 2	8
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3

Major Concentration Courses—Required

LEN 4112			The American Correctional System	3
LEN 4115	LEN 4116		Correctional Administration 1, 2	6
LEN 4315	LEN 4316		Criminology 1, 2	6
LEN 4132	LEN 4133		Administration of Justice 1, 2	6
LEN 4136	LEN 4137		Criminal Law 1, 2	6

Elective Major Concentration Courses

A total of 21 quarter hours of credit from the following courses. Not more than 9 quarter hours of seminar courses may be elected to satisfy this requirement.

LEN 4300		Human Rights in Corrections	3
LEN 4302		Correctional Counseling	3
LEN 4305	LEN 4306	Advanced Correctional Practices 1, 2	6
LEN 4307		The Law and Institutional Treatment	3
LEN 4106		Basic Statistics in Law Enforcement	3
LEN 4311		Research Methods in Criminal Justice	3
LEN 4113	LEN 4114	Social Deviance 1, 2	6
LEN 4312	LEN 4313	Treatment of Offenders 1, 2	6
LEN 4119		Delinquency Prevention	3
LEN 4317	LEN 4318	Probation and Parole Practices 1, 2	6
LEN 4120	LEN 4121	Juvenile Corrections 1, 2	6
LEN 4126		Seminar in Correctional Practices	3
LEN 4324		The National Law Enforcement Seminar	3
LEN 4128		Seminar in L.E.—Victimology	3
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
LEN 4129		Seminar in L.E.—Criminal Behavior	3
LEN 4130		Seminar in L.E.—Drugs	3
LEN 4131		Seminar in L.E.—Data Processing	3
LEN 4138	LEN 4139	Evidence and Court Procedure 1, 2	6
LEN 4143		Alcohol Problems in Law Enforcement	3
LEN 4152		Domestic Violence	3
LEN 4899		Field Work in Law Enforcement, Correctional Practices, and Security	6

Total Credits**96**

Additional department offerings on selections of intensive courses appear on pages 171–172.

Law Enforcement (Major Code 940)**Bachelor of Science Degree****quarter hours****Basic Courses—Required**

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
LEN 4326	LEN 4327		Law Enforcement Mathematics 1, 2	6
or			or	or
ACC 4101	ACC 4102		Accounting Principles 1, 2	6

Core Courses—Required

LEN 4149	LEN 4150	LEN 4151	Logical and Ethical Foundations of Decision Making 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9

Elective Core Courses

A total of 33 quarter hours from the following courses:

PSY 4270	PSY 4271		Social Psychology 1, 2	6
PSY 4372	PSY 4373	PSY 4374	Abnormal Psychology 1, 2, 3	9
SOC 4186			Social Control	3
SOC 4125			Social Problems	3
POL 4310			American Political Thought	3
POL 4312			Political Parties and Pressure Groups	3
POL 4320			American Constitutional Law	3
POL 4321			Civil Rights	3
POL 4300	POL 4301		Public Administration 1, 2	6
POL 4335			Formulating American Foreign Policy	3
POL 4375	POL 4376	POL 4377	Consumer Advocacy 1, 2, 3	9
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
POL 4322			Procedural Due Process	3
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
SPC 4251			Business and Professional Speaking	3
LNS 4110			Conversational Spanish for the Law Enforcement Professional	3
ASL 4101	ASL 4102		American Sign Language 1, 2	8
ECN 4140			Economics of Crime	3
ACC 4330	ACC 4331		Internal Auditing 1, 2	6
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
LEN 4347	LEN 4348		Human Behavioral Factors for Security Personnel 1, 2	6
LEN 4349	LEN 4350		Human Behavioral Concepts and Tactics in Police Work 1, 2	6

Major Concentration Courses—Required

LEN 4100	LEN 4101	Criminal Investigation and Case Preparation 1, 2	6
LEN 4303	LEN 4304	Interviews and Interrogations 1, 2	6
LEN 4110	LEN 4111	Introduction to Criminalistics 1, 2	6
LEN 4315	LEN 4316	Criminology 1, 2	6
LEN 4319	LEN 4320	L.E. Management and Planning 1, 2	6
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
LEN 4132	LEN 4133	Administration of Justice 1, 2	6
LEN 4136	LEN 4137	Criminal Law 1, 2	6

Elective Major Concentration Courses

A total of 42 quarter hours from the following courses. Not more than 18 quarter hours of seminar courses may be elected to satisfy this requirement.

LEN 4301		Basic Statistics in Law Enforcement	3
LEN 4102		Comparative Police Systems	3
LEN 4104	LEN 4105	Traffic Safety and Control 1, 2	6
LEN 4309	LEN 4310	Law Enforcement Identification and Records 1, 2	6
LEN 4106		Police Public Relations	3
LEN 4107		Police Community Relations	3

LEN 4311		Research Methods in Criminal Justice	3
LEN 4108	LEN 4109	The Patrol Function 1, 2	6
LEN 4113	LEN 4114	Social Deviance 1, 2	6
LEN 4117		Investigative Report Writing	3
LEN 4314		Police Supervision	3
LEN 4118		Police Work with Juveniles	3
LEN 4119		Delinquency Prevention	3
LEN 4324		National Law Enforcement Seminar	3
LEN 4328		Seminar in L.E.—Youth Crime Control	3
LEN 4128		Seminar in L.E.—Victimology	3
LEN 4329		Seminar in L.E.—International Crime Control	3
LEN 4345		Seminar in L.E.—Grantsmanship	3
LEN 4330		Seminar In L.E.—Operational Intelligence	3
LEN 4331		Seminar in L.E.—Collective Bargaining	3
LEN 4334		Seminar in L.E.—Interviewing Practicum	3
LEN 4335		Seminar in L.E.—Organized Crime	3
LEN 4336		Seminar in L.E.—Minorities and the Urban Crisis	3
LEN 4129		Seminar In L.E.—Criminal Behavior	3
LEN 4337		Seminar in L.E.—Prosecutive Development	3
LEN 4338		Seminar in L.E.—Forensic Laboratory	3
LEN 4339		Seminar in L.E.—Intervention Strategies	3
LEN 4340	LEN 4341	Civil Liberties and the Police 1, 2	6
LEN 4130		Seminar in L.E.—Drugs	3
LEN 4342		Seminar in L.E.—Executive Development	3
LEN 4343		Seminar in L.E.—Mental Health and the Police	3
LEN 4131		Seminar in L.E.—Data Processing	3
LEN 4134	LEN 4135	Civil Law in Criminal Justice 1, 2	6
LEN 4138	LEN 4139	Evidence and Court Procedure 1, 2	6
LEN 4140	LEN 4141	Fire Investigation and Arson 1, 2	6
LEN 4344		Law Enforcement Fiscal Management	3
LEN 4142		Massachusetts Criminal Law	3
LEN 4143		Alcohol Problems in Law Enforcement	3
LEN 4146		Hazardous Materials	3
LEN 4152		Domestic Violence	3
LEN 4899		Field Work in Law Enforcement, Correctional Practices, and Security	6
LEN 4800		Directed Study—In-Car Seminar	
		By special arrangement	3
LEN 4351		Corporate Ethics and Crime for the Security Practitioner	3

Total Credits**174**

Additional department offerings on selections of intensive courses appear on pages 171–172.

Law Enforcement (Major Code 941)**Associate in Science Degree****quarter hours****Basic Courses—Required**

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9

Core Courses—Required

LEN 4149	LEN 4150	LEN 4151	Logical and Ethical Foundations of Decision Making 1, 2, 3	9
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Elective Core Courses

A total of 21 quarter hours from the following courses:

PSY 4270	PSY 4271		Social Psychology 1, 2	6
PSY 4372	PSY 4373	PSY 4374	Abnormal Psychology 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
SOC 4186			Social Control	3
POL 4310			American Political Thought	3
POL 4312			Political Parties and Pressure Groups	3
POL 4320			American Constitutional Law	3
POL 4321			Civil Rights	3
POL 4300	POL 4301		Public Administration 1, 2	6
POL 4322			Procedural Due Process	3
POL 4335			Formulating American Foreign Policy	3
POL 4375	POL 4376	POL 4377	Consumer Advocacy 1, 2, 3	9
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
SPC 4251			Business and Professional Speaking	3
LNS 4110			Conversational Spanish for the Law Enforcement Professional	3
ASL 4101	ASL 4102		American Sign Language 1, 2	8
LEN 4347	LEN 4348		Human Behavioral Factors for Security Personnel 1, 2	6
LEN 4349	LEN 4350		Human Behavioral Concepts and Tactics in Police Work 1, 2	6

Major Concentration Courses Required

LEN 4100	LEN 4101		Criminal Investigation and Case Preparation 1, 2	6
LEN 4110	LEN 4111		Introduction to Criminalistics 1, 2	6
LEN 4132	LEN 4133		Administration of Justice 1, 2	6
LEN 4136	LEN 4137		Criminal Law 1, 2	6

Elective Major Concentration Courses

A total of 24 quarter hours from the following courses. Not more than 6 quarter hours of seminar courses may be elected to satisfy this requirement.

LEN 4301		Basic Statistics in Law Enforcement	3
LEN 4303	LEN 4304	Interviews and Interrogations 1, 2	6
LEN 4104	LEN 4105	Traffic Safety and Control 1, 2	6
LEN 4106		Police Public Relations	3
LEN 4107		Police Community Relations	3
LEN 4311		Research Methods in Criminal Justice	3
LEN 4108	LEN 4109	The Patrol Function 1, 2	6
LEN 4113	LEN 4114	Social Deviance 1, 2	6
LEN 4117		Investigative Report Writing	3
LEN 4314		Police Supervision	3
LEN 4118		Police Work with Juveniles	3
LEN 4315	LEN 4316	Criminology 1, 2	6
LEN 4119		Delinquency Prevention	3
LEN 4324		National Law Enforcement Seminar	3
LEN 4128		Seminar in L.E.–Victimology	3
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
LEN 4129		Seminar in L.E.–Criminal Behavior	3
LEN 4130		Seminar in L.E.–Drugs	3
LEN 4131		Seminar in L.E.–Data Processing	3
LEN 4134	LEN 4135	Civil Law in Criminal Justice 1, 2	6
LEN 4138	LEN 4139	Evidence and Court Procedure 1, 2	6
LEN 4140	LEN 4141	Fire Investigation and Arson 1, 2	6
LEN 4142		Massachusetts Criminal Law	3
LEN 4143		Alcohol Problems in Law Enforcement	3
LEN 4146		Hazardous Materials	3
LEN 4152		Domestic Violence	3
LEN 4899		Field Work in Law Enforcement Correctional Practices and Security	6
LEN 4800		Directed Study–In-Car Seminar By special arrangement	3
LEN 4351		Corporate Ethics and Crime for the Security Practitioner	3

Total Credits	96
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Additional department offerings on selections of intensive courses appear on pages 171–172.

Security (Major Code 942)

Bachelor of Science Degree

quarter hours

Basic Courses—Required

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9

Core Courses—Required

POL 4320			American Constitutional Law	3
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
or			or	or
LEN 4326	LEN 4327		Law Enforcement Mathematics 1, 2	6
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6

Elective Core Courses

A total of 36 quarter hours from the following courses:

PSY 4390	PSY 4391	PSY 4392	Industrial Psychology 1, 2, 3	9
POL 4310			American Political Thought	3
POL 4312			Political Parties and Pressure Groups	3
POL 4321			Civil Rights	3
POL 4300	POL 4301		Public Administration 1, 2	6
POL 4322			Procedural Due Process	3
POL 4335			Formulating American Foreign Policy	3
POL 4375	POL 4376	POL 4377	Consumer Advocacy 1, 2, 3	9
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
PHL 4230	PHL 4231	PHL 4232	Ethics 1, 2, 3	9
PHL 4200			Logic	3
SPC 4251			Business and Professional Speaking	3
ASL 4101	ASL 4102		American Sign Language 1, 2	8
ACC 4330	ACC 4331		Internal Auditing 1, 2	6
FI 4301			Principles of Finance	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MIS 4360			Computer Privacy and Security	3
HRM 4302			Introduction to Human Resources Management	3
HRM 4303			Applied Human Resources Management	3
LEN 4347	LEN 4348		Human Behavioral Factors for Security Personnel 1, 2	6
LEN 4349	LEN 4350		Human Behavioral Concepts and Tactics in Police Work 1, 2	6

Major Concentration Courses—Required

LEN 4100	LEN 4101	Criminal Investigation and Case Preparation 1, 2	6
LEN 4103		Introduction to Industrial Security	3
LEN 4303	LEN 4304	Interviews and Interrogations 1, 2	6
LEN 4322	LEN 4323	Physical Security 1, 2	6
LEN 4132	LEN 4133	Administration of Justice 1, 2	6
LEN 4136	LEN 4137	Criminal Law 1, 2	6
LEN 4138	LEN 4139	Evidence and Court Procedure 1, 2	6
LEN 4144	LEN 4145	Security Administration 1, 2	6
LEN 4147		Legal Aspects of Security Operations	3

Elective Major Concentration Courses

A total of 39 quarter hours from the following courses. Not more than 18 quarter hours of seminar courses may be elected to satisfy this requirement.

LEN 4309	LEN 4310	Law Enforcement Identification and Records 1, 2	6
LEN 4311		Research Methods in Criminal Justice	3
LEN 4108	LEN 4109	The Patrol Function 1, 2	6
LEN 4110	LEN 4111	Introduction to Criminalistics 1, 2	6
LEN 4113	LEN 4114	Social Deviance 1, 2	6
LEN 4117		Investigative Report Writing	3
LEN 4315	LEN 4316	Criminology 1, 2	6
LEN 4119		Delinquency Prevention	3
LEN 4319	LEN 4320	Law Enforcement Management and Planning 1, 2	6
LEN 4321		Document Control	3
LEN 4122		Industrial Fire Prevention	3
LEN 4123		Retail Security	3
LEN 4124		Bank Security Measures	3
LEN 4324		National Law Enforcement Seminar	3
LEN 4325		Hospital Security	3
LEN 4127		Seminar in Security—Current Problems	3
LEN 4128		Seminar in L.E.—Victimology	3
LEN 4330		Seminar in L.E.—Operational Intelligence	3
LEN 4331		Seminar in L.E.—Collective Bargaining	3
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
LEN 4335		Seminar in L.E.—Organized Crime	3
LEN 4129		Seminar in L.E.—Criminal Behavior	3
LEN 4134	LEN 4135	Civil Law in Criminal Justice 1, 2	6
LEN 4140	LEN 4141	Fire Investigation and Arson 1, 2	6
LEN 4146		Hazardous Materials	3
LEN 4148		Introduction to Government Security	3
LEN 4152		Domestic Violence	3
LEN 4899		Field Work in Law Enforcement, Correctional Practices, and Security	6
LEN 4351		Corporate Ethics and Crime for the Security Practitioner	3

Total Credits**174**

Additional department offerings on selections of intensive courses appear on pages 171–172.

Security (Major Code 943)**Associate in Science Degree****quarter hours****Basic Courses—Required**

SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9

Core Courses—Required

POL 4320			American Constitutional Law	3
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6

Elective Core Courses

A total of 21 quarter hours from the following courses:

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
PSY 4390	PSY 4391	PSY 4392	Industrial Psychology 1, 2, 3	9
POL 4310			American Political Thought	3
POL 4312			Political Parties and Pressure Groups	3
POL 4321			Civil Rights	3
POL 4300	POL 4301		Public Administration 1, 2	6
POL 4322			Procedural Due Process	3
POL 4335			Formulating American Foreign Policy	3
POL 4375	POL 4376	POL 4377	Consumer Advocacy 1, 2, 3	9
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
POL 4105			Introduction to Comparative Government	3
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
HST 4201	HST 4202	HST 4203	American History 1, 2, 3	9
PHL 4230	PHL 4231	PHL 4232	Ethics 1, 2, 3	9
PHL 4200			Logic	3
SPC 4251			Business and Professional Speaking	3
ASL 4101	ASL 4102		American Sign Language 1, 2	8
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
ACC 4330	ACC 4331		Internal Auditing 1, 2	6
FI 4301			Principles of Finance	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MIS 4360			Computer Privacy and Security	3
HRM 4302			Introduction to Human Resources Management	3
HRM 4303			Applied Human Resources Management	3
LEN 4347	LEN 4348		Human Behavioral Factors for Security Personnel 1, 2	6
LEN 4349	LEN 4350		Human Behavioral Concepts and Tactics in Police Work 1, 2	6

Major Concentration Courses—Required

LEN 4100	LEN 4101	Criminal Investigation and Case Preparation 1, 2	6
LEN 4103		Introduction to Industrial Security	3
LEN 4132	LEN 4133	Administration of Justice 1, 2	6
LEN 4136	LEN 4137	Criminal Law 1, 2	6
LEN 4144	LEN 4145	Security Administration 1, 2	6
LEN 4147		Legal Aspects of Security	3

Elective Major Concentration Courses

A total of 18 quarter hours of credit from the following courses. Not more than 9 quarter hours of seminar courses may be elected to satisfy this requirement.

LEN 4103		Introduction to Industrial Security	3
LEN 4303	LEN 4304	Interviews and Interrogations 1, 2	6
LEN 4108	LEN 4109	The Patrol Function 1, 2	6
LEN 4110	LEN 4111	Introduction to Criminalistics 1, 2	6
LEN 4117		Investigative Report Writing	3
LEN 4315	LEN 4316	Criminology 1, 2	6
LEN 4119		Delinquency Prevention	3
LEN 4319	LEN 4320	Law Enforcement Management and Planning 1, 2	6
LEN 4321		Document Control	3
LEN 4122		Industrial Fire Prevention	3
LEN 4322	LEN 4323	Physical Security 1, 2	6
LEN 4123		Retail Security	3
LEN 4124		Bank Security Measures	3
LEN 4324		National Law Enforcement Seminar	3
LEN 4127		Seminar in Security (Current Problems)	3
LEN 4128		Seminar in L.E.—Victimology	3
LEN 4330		Seminar in L.E.—Operational Intelligence	3
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
LEN 4335		Seminar in L.E.—Organized Crime	3
LEN 4129		Seminar in L.E.—Criminal Behavior	3
LEN 4134	LEN 4135	Civil Law in Criminal Justice 1, 2	6
LEN 4138	LEN 4139	Evidence and Court Procedure 1, 2	6
LEN 4140	LEN 4141	Fire Investigation and Arson 1, 2	6
LEN 4146		Hazardous Materials	3
LEN 4147		Legal Aspects of Security Operations	3
LEN 4148		Introduction to Government Security Programs	3
LEN 4152		Domestic Violence	3
LEN 4899		Field Work in Law Enforcement Correctional Practices, and Security	6
LEN 4351		Corporate Ethics and Crime for the Security Practitioner	3

Total Credits**96**

Additional department offerings on selections of intensive courses appear on pages 171–172.



Health Professions Programs

Paula M. Vosburgh, Director
Health Professions and Science Programs

Lana Melnik, Administrative Assistant
Telephone 617-437-2819

Aims

Programs in Allied Health are offered through University College to help students prepare for advancement and service in hospitals and other health agencies through part-time study.

Degree programs, both associate and baccalaureate, are designed to provide professional specialization and general educational development. All programs are designed to meet the accreditation standards of the Committee on Allied Health Education and Accreditation (C.A.H.E.A.) of the American Medical Association and of licensing or registration boards where such exist.

The Committee on Allied Health Education is responsible for adopting essentials (minimal standards for A.M.A. accreditation) for allied health education programs with the advice of A.M.A. section councils, medical specialty societies, and allied health organizations. The U.S. Commissioner of Education and the nongovernment Council on Post-secondary Accreditation recognize the A.M.A. and collaborating organizations to accredit educational programs for established allied health occupations.

Course Distribution

It is the goal of Northeastern University to offer students a balanced educational background. To this end, the following curriculum design will be in effect for most programs:

Professional and professionally related	35–50%
Basic and Allied Sciences	25–40%
Liberal Arts (nonscience)	25–40%

Students will choose electives to fulfill course distribution requirements and to equal the number of credits required for the specific degree.

Clinical Assignments

Clinical assignments are generally available for students whose programs require directed applied study in a clinical setting. In most instances

didactic information is presented at the University while clinical practice is at various hospitals or other health agencies in the Greater Boston community. Positions for applied clinical studies are often offered on a competitive basis, with the student's academic performance in both didactic and basic professional courses used as the basis for the student's acceptance. Academic credit earned during the practicum is usually applicable toward the degree requirement.

Students accepting clinical assignments in health facilities are expected to adhere to requirements of the facility, all of which are outside University control.

Preprofessional Medical Courses

Each year a number of students enroll in University College courses in order to complete science courses required for entrance into a doctoral health professional school. Most of these persons already possess a bachelor's degree in a non-science field, although a few may be enrolled in a B.S. or B.A. degree program in University College. The information provided here is for those students who plan to apply for admission to schools of medicine, osteopathy, dentistry, podiatry, or optometry. Those desiring to pursue veterinary medicine may need to meet different entrance requirements and should consult the chair of the Health Professions Advisory Committee for additional advice.

Course Requirements Professional schools for each of the doctoral health professions have quite similar undergraduate college course requirements. These courses must be completed before one may enroll in medical school, and generally should be completed before one takes the admission test (MCAT, DAT, etc.) that is part of the admissions process.

A complete list of University College course sequences designed to meet the minimum requirements of most medical and dental schools may be obtained by contacting any of the parties listed below. Information regarding the course work necessary to obtain evaluation letters through the Health Professions Advisory Committee is included.

Sources of Advice:

Paula Vosburgh, Director
Health Professions and Science Programs
244 Forsyth Building
Telephone 617-437-2819

University College
Office of Academic and Student Affairs
102 Churchill Hall
Telephone 617-437-2400

Dr. C. H. Ellis, Jr.
Chairperson, Health Professions Advisory
Committee
Biology Department
Northeastern University
445 Richards Hall
Telephone 617-437-4032

Professor T. J. McEneaney
Office of Career Development and Placement
Northeastern University
132 Nightingale Hall
Telephone 617-437-2430

Area Program Directors and Coordinators

Within the University College Health Professions Programs there are several Area Program Directors and Coordinators. Area Program Directors, along with the Associate Dean of University College for Health Professions Programs, have overall responsibility for the academic integrity and quality of the health programs in their areas of specialty. The Program Coordinators for each area serve as the chief academic advisers for students in their programs.

Program Director and Coordinator for Health Management; telephone 617-437-2819.

Prof. Judith Weilerstein, Program Director for Health/Medical Record Administration (College of Pharmacy and Allied Health Professions); telephone 617-437-3663.

Stanley Bozen, Program Director for Radiologic Technology (University College); telephone 617-437-2818.

Prof. Frank Robinson, Program Director for Therapeutic Recreation Services (Boston-Bouv  College of Human Development Professions); telephone 617-437-3157.

Program Director for the Dental Assistant Program (University College); telephone 617-437-2829.

Prof. Gerald L. Davis, Program Director for Medical Laboratory Science (College of Pharmacy and Allied Health Professions); telephone 617-437-3664.

Dr. Theodore Blank, Program Director and Coordinator for the B.S. degree program in Health Science (University College); telephone 617-727-1960.

Barbara Martin, Program Coordinator for MLS (College of Pharmacy and Allied Health Professions); telephone 617-437-3664.

Annalee Collins, Program Coordinator for Health/Medical Records Administration (College of Pharmacy and Allied Health Professions); telephone 617-437-2525.

Health Science (Major Code 865)

Bachelor of Science Degree

The Bachelor of Science Degree in Health Science is available to students holding registration or licensure (as defined by University regulations) in a specific health profession and trained in an approved program accredited by the appropriate medical association (American Medical Association, National League of Nursing, American Dental Association, etc.).

All students in this program should consult with an academic adviser.

Distribution Requirements for the B.S. Degree				quarter hours
Liberal Arts (nonscience)				42
Sciences				44
Professional and professionally related				45-48
Electives and/or transfer credit				40-43
To equal				174

A. Liberal Arts (Nonscience)

Required				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9

Humanities (Recommended Courses)

9

To be selected from areas beginning with these department codes:

PHL	Philosophy and Religion
ART	Fine Arts
MUS	Music
DRA	Theatre Arts
ENG	and
TCC	English and Technical Communications
LNF, LNS, LNG, LNR, LNJ, LNA, LNN, and	
LNI	Modern Languages
ASL	American Sign Language
SPC	Speech Communication
JRN	Journalism

Social Sciences (Recommended Courses)

9

To be selected from areas beginning with these department codes:

PSY	Psychology
ANT	Anthropology
SOC	Sociology
POL	Political Science
HST	History and Social Welfare
ECN	Economics

Electives in Above Areas

15

B. Sciences**Required Basic**

BIO 4103	BIO 4104		Biology 1, 2	8
BIO 4175	BIO 4176	BIO 4177	Anatomy and Physiology 1, 2, 3	9
BIO 4190			Microbiology 1	3
MTH 4110	MTH 4111		Mathematics 1, 2	6
or			or	or
MTH 4107	MTH 4108		College Algebra and Introduction to Calculus	8
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
or			or	or
CHM 4101	CHM 4102	CHM 4103	Modern Chemistry 1, 2, 3	9

Required Advanced

To be taken after matriculation in B.S. program, and to be determined by profession.

Select a minimum of 9 q.h. from the following:

BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, 3	8
BIO 4461			Immunology	4
BIO 4320			Medical Microbiology	4
BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, 3	8
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
HSC 4600			Advanced Nutrition	3
HSC 4601			Advanced Pharmacology	3
BIO 4350	BIO 4351	BIO 4352	Histology-Organology 1, 2, 3	6
BIO 4258	BIO 4259		Advanced Human Physiology 1, 2	6
MLS 4321	MLS 4322	MLS 4323	Hematology; Morphologic Hematology 1, 2	9

C. Professional and Professionally Related

General Core Required

HSC 4301	HSC 4302	Foundations of Medical Science 1, 2	6
HMG4200		Health Science Statistics	3

General Core Options

Select 18 q.h. from the following:

REC 4460		Process of Aging	3
HSC 4215		Hospital Law and Ethics	3
HMG4310	HMG4311	Principles and Practices of Community Health 1, 2	6
HMG4610		Principles and Practices of Community Mental Health	3
HSC 4310	HSC 4311	Public Health 1, 2	6
HMG4301		Health Care Delivery	3
HMG4550	HMG4551	Contemporary and Controversial Health Care Issues 1, 2	6
MLS 4341		Epidemiology 1	3
HSC 4315		Environmental Problems and Health	3
HSC 4220		Basic Pharmacology	3
HSC 4210		Basic Nutrition	3

Additional General Core Options for students with a clinical laboratory background:

*BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, 3	8
*BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, 3	8
*BIO 4461			Immunology	4
CHM4224			Analytical Chemistry	4
*BIO 4350	BIO 4351	BIO 4352	Histology-Organology 1, 2, 3	6
CHM4381	CHM4382	CHM4383	Physical Chemistry 1, 2, 3	9

General Educational and Administrative—Required

HMG4100	HMG4101	Hospital Organization and Management 1, 2	6
HSC 4320	HSC 4321	Health Science Education 1, 2	6

Advanced Professional Options

Courses in professional, health education, or health administration areas to be taken after matriculation into B.S. degree program in Health Science.

Select 6–9 q.h. from the following:

HMG4400	HMG4401	Health Care Finance 1, 2	6
HMG4425	HMG4426	Applied Health Care Management 1, 2	6
HSC 4602		Methods and Materials of Public Health Education	3
HMG4210	HMG4211	Medical Care and Current Social Problems 1, 2	6
HSC 4610		Geriatric Nutrition	3
HSC 4613		Oral Microbiology	3
HSC 4614	HSC 4615	Advanced Periodontology 1, 2	6
HLS 4342		Epidemiology 2	3
HMG4430	HRM 4431	Communications for Health Care Personnel 1, 2	6

Additional Advanced Professional Options for students with a clinical laboratory science background:

*MLS 4322	MLS 4323	Morphologic Hematology 1, 2	6
†MLS 1323		Hemostasis	2
†MLS 1324		Histochemistry	2
†MLS 1331		Clinical Immunology	3
†MLS 1333		Immunohematology	2
*BIO 4258	BIO 4259	Advanced Human Physiology 1, 2	6
CHM 4321	CHM 4322	Instrumental Analysis 1, 2	6
CHM 4323		Radiochemistry	3
MLS 4365		Quality Control	3
BIO 4191	BIO 4192	Microbiology 2, 3	6
*BIO 4320		Medical Microbiology	4

D. Electives

Electives and/or Transfer Credits to Equal

174

*Courses may be utilized in only one category; requirements must be fulfilled in each category.

†Tuition for this course is at the Basic College tuition rate.

Health Management (Major Code 860)

Bachelor of Science Degree

The Bachelor of Science degree program in Health Management is intended for individuals who wish to prepare, on a part-time basis, for entry into or advancement in managerial positions in the health care field. This program includes special concentration of professional courses to prepare for licensure examination in Long Term Care Administration.

The Health Management curriculum encompasses course work from a variety of disciplines. Courses are planned, in many instances, to be taken in a preset sequence, which first introduces broad concepts and then gives students an opportunity to apply such concepts in specific professional courses. Some management courses serve as prerequisites to more specialized health care administration courses. Similarly, certain health care administration courses serve as foundations for other electives. Students must adhere to the prerequisites in their course selection. The following is a summary of planned course sequences. *It is not necessary to take sequence A before sequence B, and so on; prerequisites only apply to courses within a sequence.*

A.

MTH	4110	Mathematics 1
MTH	4111	Mathematics 2
HMG	4200	Health Science Statistics

B.

ACC	4101	Accounting Principles 1
ACC	4102	Accounting Principles 2
FI	4301	Principles of Finance
HMG	4400	Health Care Financial Management 1
HMG	4401	Health Care Financial Management 2

C.

MGT	4101	Introduction to Business and Management 1
MGT	4102	Introduction to Business and Management 2
HMG	4100	Hospital Organization and Management 1
HMG	4101	Hospital Organization and Management 2

D.

HMG 4100	Hospital Organization and Management 1
HMG 4101	Hospital Organization and Management 2
HMG 4425	Applied Health Care Management 1
HMG 4426	Applied Health Care Management 2

E.

HMG 4100	Hospital Organization and Management 1
HMG 4101	Hospital Organization and Management 2
HMG 4550	Contemporary and Controversial Health Care Issues 1
HMG 4551	Contemporary and Controversial Health Care Issues 2

F.

HRA 4302	Medical Terminology Survey
HSC 4301	Foundations of Medical Science 1
HSC 4302	Foundations of Medical Science 2

Distribution Requirements for the B.S. Degree

quarter hours

Basic Courses	33
Arts and Sciences	45
Management	33
Health Care Administration	30
Health Care Management Concentration Option 1 or 2	33

Basic Courses—Required

MTH 4110	MTH 4111		Mathematics 1, 2	6
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9

Arts and Sciences Core Courses—Required

BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Anatomy & Physiology 1, 2, 3	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
			Social Science or Humanities Electives	15

Management Courses—Required

HMG 4200		Health Science Statistics	3
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
FIN 4301		Principles of Finance	3
MGT 4101		Introduction to Business and Management 1	3
MIS 4101		Introduction to Data Processing and Information Systems 1	3
HMG 4430	HMG 4431	Communications for Health Care Personnel 1, 2	6
HRM 4310		Personnel Management 1	3
MIS 4355		Information Processing in Medicine	3
MGT 4102		Introduction to Business and Management 2	3

Health Care Administration Courses—Required

HSC 4215		Hospital Law and Ethics	3
HMG 4400	HMG 4401	Health Care Financial Management 1, 2	6
HSC 4301	HSC 4302	Foundations of Medical Science 1, 2	6
HRA 4302		Medical Terminology Survey	3
HMG 4100	HMG 4101	Hospital Organization and Management 1, 2	6
HMG 4310		Principles and Practices of Community Health 1	3
HMG 4301		Health Care Delivery	3

quarter hours**Option 1 Long Term Care Administration**

For licensure as a nursing home administrator, the Board of Registration of Nursing Home Administrators in Massachusetts requires an internship, a licensure examination, and a baccalaureate degree. The required courses in this option help prepare the student for the licensure examination in Massachusetts. Each student, however, is cautioned to contact the Board of Registration of Nursing Home Administrators to ascertain the specific requirements for eligibility to sit for the exam in Massachusetts.

Required Courses

SOC 4225			Social Gerontology	3
*HMG 4600	HMG 4601	HMG 4602	Long Term Care Administration A, B, C	18

*Students who, in years past, may have successfully completed any courses in Long Term Care Administration (former sequence 86.340 through 86.345) are required to consult with the Program Director's Office (617-437-2819) prior to registering for Long Term Care Administration A, B, or C.

Electives

Select 12 quarter hours from the following, or other electives with permission of adviser.

REC 4101	REC 4102	REC 4103	Principles and Practices of Therapeutic Recreation 1, 2, 3	9
HSC 4220			Basic Pharmacology	3
HSC 4210			Basic Nutrition	3
HMG 4425	HMG 4426		Applied Health Care Management 1, 2	6
HMG 4300			Home Health Care	3
HSC 4315			Environmental Problems and Health	3

Option 2 Community Health Management**Required Courses**

HMG 4425	HMG 4426	Applied Health Care Management 1, 2	6
HMG 4311		Principles and Practices of Community Health 2	3
MLS 4341		Epidemiology 1	3
HSC 4310		Public Health 1	3

Electives

Select 18 quarter hours from the following, or other electives with permission of adviser.

HMG 4610		Principles and Practices of Community Mental Health	3
HSC 4311		Public Health 2	3
HMG 4550	HMG 4551	Contemporary and Controversial Health Care Issues 1, 2	6
HMG 4300		Home Health Care	3
HSC 4315		Environmental Problems and Health	3
SOC 4215		Medical Sociology	3

MLS 4342	Epidemiology 2	3
HSC 4220	Basic Pharmacology	3
HSC 4210	Basic Nutrition	3
Total Credits		174

Health/Medical Record Administration

The Profession The health/medical record administrator has varied responsibilities relating to health information systems. He/she may organize, operate, and manage medical record services. The program offers the student the opportunity to develop the capability to design health information and retrieval systems; to plan, organize, and direct medical record services; to develop, analyze, and evaluate medical records and indexes; to work with medical and administrative staffs in developing methods for evaluation of patient care, and in research projects utilizing health care information.

The Health/Medical Record Administration Program leading to a B.S. degree has been in effect at Northeastern University since 1966. The professional certification program, open to students already holding baccalaureate degrees and offering the required professional courses, was instituted in 1967.

Northeastern University's programs in Health Record Administration are approved by the Com-

mittee on Allied Health Education and Accreditation in cooperation with the American Medical Record Association.

Candidates who wish to matriculate in this program must be interviewed by the Program Director. Arrangements for this interview may be made through the Health Records Office, 205 Mugar Building. No candidate will be considered as matriculated until this requirement has been met.

In designated professional courses (*), students must obtain a grade of C or better. Only one professional course may be repeated. Students who receive a grade of D in more than one professional course will be asked to withdraw from the program.

Students applying for the clinical sequence of courses (HRA 4324, HRA 4325, HRA 4326) must have a quality point average of 2.5 and the approval of their assigned Health Record Program adviser.

Health/Medical Record Administration (Major Code 861) Bachelor of Science Degree
quarter hours

Successful completion of this program qualifies a student for admission to the professional registration examinations conducted by the American Medical Record Association.

Basic Courses—Required

MTH 4110	MTH 4111	Mathematics 1, 2	6
PSY 4110		Introduction to Psychology: Fundamental Issues	3
PSY 4111		Introduction to Psychology: Developmental Aspects	3
PSY 4112		Introduction to Psychology: Personal Dynamics	3
ENG 4110	ENG 4111	English 1, 2, 3 (required prior to matriculation)	9
ECN 4115	ECN 4116	Economic Principles and Practices 1, 2, 3	9
	ENG 4112		
	ECN 4117		

Arts and Sciences Core Courses—Required

BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Anatomy and Physiology 1, 2, 3*	9
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
SOC 4102			Introduction to Sociology: Critical Issues Facing Society	3
{ POL 4103			{ Introduction to Politics	{ 3
{ POL 4104			{ Introduction to American Government	{ 3
{ POL 4105			{ Introduction to Comparative Government	{ 3
or			or	or
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2*	6
Humanities			Arts, English, Language, Philosophy, Music	6

Professional and Professionally Related Courses—Required

MIS 4101			Introduction to Data Processing and Information Systems 1	3
HRM 4301			Organizational Behavior	3
HRA 4308			Hospital Management for Medical Record Administrators*	3
HRA 4330			Medical Record Computer Science*	3
HMG4215			Hospital Law and Ethics*	3
HSC 4301	HSC 4302		Foundations of Medical Science 1, 2*	6
HRA 4305	HRA 4306		Medical Terminology 1, 2*†	4
HRA 4320	HRA 4321		Organization of the Medical Record Department 1, 2*	6
HRA 4310	HRA 4311	HRA 4312	Medical Record Science 1, 2, 3*	18
HRA 4313	HRA 4314		Medical Record Science 4, 5*	12
HRA 4324	HRA 4325	HRA 4326	Applied Medical Record Science 1, 2, 3*	9
HRA 4332			Topics in Health Records	3
HMG4301			Health Care Delivery	3

Elective Courses **18****Total Credits** **178**

*In these designated professional courses, students must obtain a grade of C or better. Only one professional course may be repeated. Students who receive a grade of D in more than one will be asked to withdraw from the program.

†In cooperation with the Health Records Office of the College of Pharmacy and Allied Health Professions, a challenge examination for Medical Records majors may be available for HRA 4305 and HRA 4306 by contacting the University College Health Professions Program at 617-437-2819.

Health/Medical Record Administration Certificate Program (Major Code 862)

Candidates who wish to qualify for admission to the professional examination leading to registration as a Medical Record Administrator and who already hold a baccalaureate in another field of study from a college or university acceptable to Northeastern University may undertake the following course work. Graduates of approved schools in medical record administration are eligible for the national registration examination given by AMRA. Passing this examination gives professional recognition as a Registered Record Administrator (RRA). Successful completion of this course sequence with a cumulative point average of 2.5 will lead to certification from University College that the candidate has completed a professional program in Health Record Science. In addition to the required courses listed below, candidates must complete one year of a natural science, such as biology, chemistry, or microbiology, and a course in descriptive statistics. These requirements are in addition to the laboratory course in anatomy and physiology.

Candidates who wish to matriculate in this program must be interviewed by the Program Adviser. Arrangements for this interview may be

made through the Health Records Office, 205 Mugar Building. No candidate will be considered as matriculated until this requirement has been met.

Note: In addition to the required course work, proof of understanding of principles of descriptive statistics must be demonstrated. This requirement may be satisfied by successful completion of an approved statistics course at Northeastern or another university, or completion of University College course ECN 4250, Statistics 1, with a grade of C or better.

Courses Required for Professional Certification In the professional courses listed below, students must obtain a grade of C or better. Only one professional course may be repeated. Students who receive a grade of D in more than one professional course will be asked to withdraw from the program.

Students applying for the clinical courses HRA 4324, HRA 4325, and HRA 4326 must have a quality point average of 2.5 and the approval of their assigned Health Record Program adviser.

Courses Required for Professional Certification

				quarter hours
BIO 4175	BIO 4176	BIO 4177	Anatomy and Physiology 1, 2, 3	9
HMG4215			Hospital Law and Ethics	3
HSC 4301	HSC 4302		Foundations of Medical Science 1, 2	6
HRA 4305	HRA 4306		Medical Terminology 1, 2†	4
HRA 4310	HRA 4311	HRA 4312	Medical Record Science 1, 2, 3	18
HRA 4313	HRA 4314		Medical Record Science 4, 5	12
HRA 4320	HRA 4321		Organization of the Medical Records Department 1, 2	6
HRA 4308			Hospital Management for Medical Record Administrators	3
MIS 4101			Information to Data Processing and Information Systems 1	3
HRA 4330			Medical Record Computer Science	3
HRA 4324	HRA 4325	HRA 4326	Applied Medical Record Science 1, 2, 3	9
HMG4301			Health Care Delivery	3
HRA 4332			Topics in Health Records	3

Total Credits

82

†In cooperation with the Health Records Office of the College of Pharmacy and Allied Health Professions, a challenge examination for Medical Records majors may be available for HRA 4305 and HRA 4306 by contacting the University College Health Professions Program at 617-437-2819.

Nursing (Evening Section)

A Bachelor of Science in Nursing degree is available to registered nurses through the part-time evening section administered by University College. This option is offered in collaboration with the College of Nursing, which is fully accredited by the National League for Nursing.

University College's Bachelor of Science in Nursing Program is unique in that it allows students to fulfill in the evening both classroom and clinical components of Nursing Transition (NUR 4300), Community Health Nursing (NUR 4500), and Contemporary Nursing (NUR 4501). It is unique, too, in that a registered nurse who completes Nursing Transition (NUR 4300) with a grade of B or higher is eligible for 22 quarter hours of advanced placement credit, plus any transfer credits University College may accept from another institution. (See page 21, Transfer Credit Procedure.)

Admission Procedure The following credentials are required to initiate the admission process into the part-time evening section and should be forwarded to Gretchen Thompson, Director of Academic and Student Affairs, University College, 102 Churchill Hall, 360 Huntington Avenue, Boston, MA 02115:

- a resume detailing education, professional work experiences and professional and community activities

**Nursing (Evening Section)
(Major Code 809)****Bachelor of Science in Nursing Degree**

- official transcripts from high school, college or university, and basic nursing school (the nursing school transcript should include a senior summary statement)
- a copy of your Massachusetts Registered Nurse license
- a completed evening section Nursing Program application form (available at 102 Churchill Hall)
- A reference from your most recent nursing employer.

Note: Pre-admission counseling is available by calling the Director of Academic and Student Affairs at 617-437-2400.

Planning a Program of Study Candidates who wish to matriculate in this program must plan their program of study with the Academic Coordinator. Appointments can be arranged by calling 617-437-3029.

Potential students, as well as those now enrolled in the program, are encouraged to attend Group Information Sessions in order to increase their awareness of College of Nursing and University College policies. These sessions cover course requirements, promotional policies, advanced placement examinations, and nursing course petition procedures. To register, telephone 617-437-3029.

Arts and Sciences Core Courses—Required

			Bachelor of Science in Nursing Degree	
				quarter hours
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3	9
BIO 4103	BIO 4104		Biology 1, 2	8
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
BIO 4175	BIO 4176	BIO 4177	Human Anatomy & Physiology 1, 2, 3	9
BIO 4320			Microbiology	3
or			or	or
BIO 4191			Medical Microbiology	3
PSY 4110	PSY 4111	PSY 4112	Introduction to Psychology 1, 2, 3	9
PCL 4300			Pharmacodynamics	3
SOA 4101	SOA 4102		Anthropology 2, 3	6
HST 4101	HST 4102	HST 4103	History of Civilization 1, 2, 3	9
SOC 4100	SOC 4101		Introduction to Sociology 1, 2	6
PSY 4270	PSY 4271		Social Psychology 1, 2	6

Electives

A minimum of 8 q.h. must be in Humanities.

Nursing Courses—Required

*NUR 4300	Nursing Transition	9
†NUR 4301	Psychiatric Mental Health Nursing	7
†NUR 4400	Maternal Child Nursing	9
†NUR 4401	Medical Surgical Nursing	9
†NUR 4500	Community Health Nursing	9
†NUR 4501	Contemporary Nursing	9

*To enroll in NUR 4300, the registered nurse must submit a petition to the Academic Coordinator at least one full quarter in advance of registering. Students must also obtain a clearance from the Lane Health Center, and present evidence of having had a tuberculin skin test within the previous 12 months.

†Challenge examinations are available for these courses.

Medical Laboratory Science—Medical Technology

**Associate Degree
Bachelor's Degree**

The Profession Medical Laboratory Science is concerned with laboratory examination of material necessary for proper monitoring of health and for the diagnosis and treatment of illness. Working in a variety of specialized fields such as microbiology, blood banking, hematology, clinical chemistry, or as generalists in all these areas, medical laboratory technicians and technologists are important health professionals.

The associate degree medical laboratory technician works under the direct supervision of a medical technologist and performs most of the common medical laboratory tests. The bachelor's degree medical technologist is considered qualified to perform, with little or no direct supervision, levels of laboratory tests from the simplest to the most complex. With additional education or experience, medical technologists can also function as educators, researchers, or supervisors. Medical technicians and technologists hold positions in hospital, private, and research laboratories. Some serve as sales and technical representatives for scientific supply and equipment companies; others serve in government positions.

Both the associate degree and bachelor's degree programs are conducted in affiliation with hospitals in the Boston area. The Baccalaureate degree is accredited by the Committee of Allied Health Education and Accreditation of the American Medical Association. Upon successful completion of one of these programs, the student receives either the Associate in Science or Bachelor of Science degree and is eligible to take a national certification examination given by either the National Certification Agency for Medical Laboratory Personnel or the Board of Registry of the American Society of Clinical Pathology.

The basic courses in medical laboratory science and basic science and general education

courses are offered evenings, but the advanced medical laboratory science courses and the clinical experience are only offered full time during the day.

Prerequisite: Satisfactory completion of the Mathematics Placement Test or Introduction to Mathematics 1 and 2 (courses MTH 4110, MTH 4111).

Professional Requirements for the Associate Degree—Medical Laboratory Technician A clinical applied study program or appropriate substitute work experience is a required component of this degree. Work experience is acceptable if it meets the requirements for certification of either the National Certification Agency for Medical Laboratory Personnel or the Board of Registry of the American Society of Clinical Pathologists. Students without appropriate work experience can apply for clinical applied studies through the University College MLS Clinical Coordinator in Room 206 Mugar.

Prerequisites for the clinical applied studies are a minimum of a 2.0 quality point average in required courses and a C– or better in each Medical Laboratory Science course (MLS . . . courses.) These basic courses are available during the evening and are offered directly through the College of Pharmacy and Allied Health Professions. Students register as special students in the Basic College at Northeastern University. Tuition is the same as that charged for all Basic College MLS professional courses. These courses should be completed within three years of applying to the AD-MLT Clinical Applied Studies.

Students must apply to the Clinical Coordinator in the College of Pharmacy and Allied Health Professions (206 Mugar) for the six-month clinical

applied studies component of the associate degree program in Medical Laboratory Science. This should be done one year in advance of the anticipated time of entry into the applied study courses. *Students register as special students in the College of Pharmacy and Allied Health Professions.* Tuition is at Basic College rates for Basic College courses.

Professional Requirements for the Bachelor of Science Degree Clinical applied study courses are available only full time during the day and are offered directly through the College of Pharmacy and Allied Health Professions. Students must apply for the applied study courses one year in

advance of the anticipated time of entry into the applied study. A minimum of four quarters of full-time study is required for completion of the program requirements. During this time the student must meet all the requirements of the last four quarters of the undergraduate Basic College curriculum for the B.S. degree. Students register as special students in the Basic College. Tuition is the same as that charged for all Basic College medical laboratory science professional courses.

Prerequisites for the clinical applied study component include completion of each MLS course with a C- or better grade within five years of application to the applied study and completion of all other courses with an overall quality point average of 2.5 or higher.

Medical Laboratory Science—Medical Laboratory Technician (Major Code 800)

Associate Degree quarter hours

General				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
HMG4210			Medical Care and Current Social Problems	3
HMG4215			Hospital Law and Ethics	3
MTH 4107	MTH 4108		College Algebra and Introduction to Calculus	8
Biology				
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
Chemistry				
CHM4111	CHM4112	CHM4113	General Chemistry 1, 2, 3	9
CHM4224			Analytical Chemistry	4
MLS				
MLS 4301			Medical Laboratory Science Orientation	2
*MLS 1311			Basic MLS Urinalysis	2
*MLS 1321			Basic Hematology 1	2
*MLS 1322			Basic Hematology 2	2
*MLS 1330			Basic Immunohematology	2
*MLS 1341			Basic Clinical Microbiology	4
*MLS 1351			Basic Clinical Chemistry	4
*MLS 1331			Basic Clinical Immunology	3
Electives				
			Humanities	6
			Social Science	3
			Free	9
Total Credits				96

*Tuition for this course is at the Basic College tuition rate.

Medical Technology—Medical Technologist (Major Code 801) Bachelor of Science

Credits from Associate Degree in Medical Laboratory Technician Program quarter hours
96

Biology

BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab	8
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab	8
BIO 4190			Microbiology 1	3

Chemistry

CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
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Epidemiology

MLS 4351			Epidemiology 1	3
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Physics

PHY 4104	PHY 4105	PHY 4106	General Physics 1, 2, 3	6
PHY 4174			Physics Laboratory 2	2

Electives

			Humanities	3
			Social Science	3
			Free	6

Strongly recommended electives are psychology, computer course, statistics.

Clinical Applied Study

See explanation on page 108.

Tuition for all the courses listed below is at the Basic College tuition rate; to register for these courses, phone 617-437-3664.

MLS 1523			Applied Hematology	4
MLS 1532			Applied Immunohematology	3
MLS 1544			Applied Clinical Microbiology	7
MLS 1552			Applied Clinical Chemistry	7
MLS 1643			Medical Mycology	3
MLS 1890			Undergraduate Research	1
MLS 1891			MLS Current Special Topics	1
MLS 1642			Medical Parasitology	2
MLS 1665			MLS Management	2
MLS 1641	MLS 1642	MLS 1643	Clinical Microbiology 2, 3, 4	6
MLS 1651	MLS 1652	MLS 1653	Clinical Chemistry 2, 3, 4	6
MLS 1661			MLS Education	2
MLS 1621	MLS 1622		Hematology 3, 4	5
MLS 1631			Immunohematology	2
MLS 1680			MLS Special Topics	2
MLS 1681			MLS Senior Seminar	2

Total Credits **204**

Note: Please refer to the current Northeastern University *Basic Day College Course Description and Curriculum Guide* for course descriptions of Clinical Applied Study courses.

Medical Laboratory Science—Hematology**Bachelor of Science Degree**

The Profession Hematology is a specialty within medical laboratory science. Hematology technologists may be employed in hospitals and clinical laboratories, where they perform specific laboratory tests that aid in the diagnosis, treatment, and follow-up of infections, anemias, leukemias, and bleeding disorders. The modern hematology laboratory is usually well equipped with electronic instruments which the technologist must operate and maintain. Additional responsibilities may include laboratory quality control and associated problem solving.

The requirements for categorical certification in hematology are indicated by the Board of Registry of the American Society of Clinical Pathologists.

Students should contact the American Society of Clinical Pathologists, Board of Registry, P.O.

Box 96215, Chicago, Illinois 60693 for details concerning eligibility to write the hematology examination.

The curriculum in hematology does not incorporate a clinical or applied study component but is primarily designed for those who work in this field. It gives them the opportunity to earn a baccalaureate degree with a concentration in this particular area of clinical laboratory science.

All Medical Laboratory Science clinical courses will be offered directly through the College of Pharmacy and Allied Health Professions. *Students must register as special students of the Basic College.* Tuition is the same as that charged for all Basic College Medical Laboratory Science professional courses. A grade of C– or better is required in the professional courses.

Hematology (Major Code 807)**Bachelor of Science Degree****quarter hours**

Biology				
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
BIO 4190			Microbiology 1	3
BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab	8
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab	8
Math				
MTH 4107	MTH 4108		College Algebra and Introduction to Calculus	8
Chemistry				
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
CHM 4224			Analytical Chemistry (Summer Intensive)	4
or			or	or
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	9
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
Physics				
PHY 4104	PHY 4105	PHY 4106	General Physics 1, 2, 3	6
PHY 4174			Physics Laboratory 2	2
English				
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation.)	9

Medical Laboratory Science

MLS 4301	MLS Orientation (required if not working in the field)	2
*MLS 1311	Basic Urinalysis	2
*MLS 1321	Basic Hematology 1	2
*MLS 1322	Basic Hematology 2	2
*MLS 1341	Basic Clinical Microbiology	4
*MLS 1330	Basic Immunohematology	2
*MLS 1351	Basic Clinical Chemistry	4

*MLS 1331		Basic Clinical Immunology	3
*MLS 1890		Undergraduate Research	2
*MLS 1642		Parasitology (offered days only)	2
*MLS 1323		Coagulation	2
*MLS 1333		Immunohematology	2
*MLS 1324		Histochemistry	2
MLS 4322	MLS 4323	Morphologic Hematology 1, 2	6
HSC 4320	HSC 4321	Health Science Education 1, 2	6
MLS 4365		Quality Control	3

Health Related

HMG 4215		Hospital Law and Ethics	3
HMG 4210	HMG 4211	Medical Care and Current Social Problems	6
HMG 4100	HMG 4101	Hospital Organization and Management 1, 2	6

Electives

Humanities	9
Social Science	9
Free electives	18

Strongly recommended electives are histology, psychology, economics, sociology, statistics, hematology, computer course, epidemiology.

Total Credits **187**

*Tuition for this course is at the Basic College tuition rate. Please refer to the current Northeastern University *Basic Day College Course Description and Curriculum Guide* for course descriptions. To register call 617-437-3664.

Radiologic Technology

The program in Radiologic Technology is a joint offering of the University and several area hospitals. The classroom experiences are provided by the University, and the Laboratory Practicum is conducted at an assigned affiliated hospital. The Program is accredited by the Council on Medical Education of the American Medical Association.

The Radiologic Technologist is a respected member of the allied health team in the diagnostic and therapeutic environment of the clinic or hospital, and an important functionary in the production, quality control, and inspection laboratories of the industrial community. Medically related responsibilities demand effective rapport with internists, surgeons, pathologists, nurses, and laboratory personnel, while industrial competency requires close association with metallurgists, production and manufacturing specialists, engineers, and scientists.

Prerequisite: Candidates must have satisfactorily passed at the high school level three years of math (Algebra 1, Algebra 2, and geometry), one year of biology, and one year of an additional science (chemistry or physics). All applicants

must satisfactorily complete the Scholastic Aptitude Test (SAT) and submit one letter of recommendation from a science instructor. In addition, applicants must satisfy general University requirements and satisfactorily complete the University's Mathematics Placement Test. Candidates successfully meeting the above requirements will be scheduled for an interview with the Radiologic Technology Program Directors.

Associate Degree Program This program (29 months) is a full-time day division of University College.

All graduates are eligible to sit for examination for certification by the American Registry of Radiologic Technologists.

Part-time Associate Degree Evening Program Candidates who wish to qualify for admission to University College for the part-time Associate Degree Program in Radiologic Technology must be certified by the American Registry of Radiologic Technology.

Completion of the courses listed under **Part-Time Evening Program** is required for the Associate in Science Degree.

Radiologic Technology (Major Code 806)**Associate in Science Degree****quarter hours****First Year**

<i>Quarter 1</i>		
MTH 4110	Mathematics 1	3
RAD 4112	Gross Anatomy and General Physiology A	3
RAD 4113	Anatomy and Physiology Lab A	1
ENG 4110	English 1	3
RAD 4100	Radiologic Technology Orientation 1	3
RAD 4102	Radiologic Science 1	4

<i>Quarter 2</i>		
RAD 4114	Gross Anatomy and General Physiology B	3
RAD 4115	Anatomy and Physiology Lab B	1
ENG 4111	English 2	3
RAD 4104	Principles of Radiology 1	4
RAD 4106	Radiologic Photography and Exposure 1	4
RAD 4103	Radiologic Science 2	4

<i>Quarter 3</i>		
RAD 4108	Radiologic Clinical Practicum 1—Full Time at Hospitals	3

<i>Quarter 4</i>		
MTH 4111	Mathematics 2	3
BIO 4103	Biology 1 with Laboratory	4
RAD 4107	Radiologic Photography and Exposure 2	4
RAD 4105	Principles of Radiology 2	4
RAD 4101	Radiologic Technology Orientation 2	3

Second Year

<i>Quarter 1</i>		
RAD 4109	Radiologic Clinical Practicum 2—Full Time at Hospitals	3

<i>Quarter 2</i>		
RAD 4110	Radiologic Clinical Practicum 3—Full Time at Hospitals	3

<i>Quarter 3</i>		
BIO 4104	Biology 2 with Laboratory	4
PSY 4110	Introduction to Psychology: Fundamental Issues	3
PSY 4111	Introduction to Psychology: Developmental Aspects	3
ENG 4112	English 3 (required prior to matriculation)	3
RAD 4300	Advanced Radiologic Technology 1	3
RAD 4303	Radiation Protection & Radiobiology†	3

<i>Quarter 4</i>		
RAD 4111	Radiologic Clinical Practicum 4—Full Time at Hospitals	3

Third Year

Quarter 1		
BIO 4105	Biology 3 with Laboratory	4
MGT 4101	Introduction to Business and Management 1†	3
RAD 4301	Advanced Radiologic Technology 2†	3
RAD 4302	Imaging Modalities†	3
MIS 4101	Introduction to Data Processing and Information Systems 1	3

Final Quarter Full time at hospitals until mid-January.

Total Credits 101

Part-Time Associate Degree Evening Program*			Associate in Science Degree	quarter hours
MTH 4110	MTH 4111		Mathematics 1, 2	6
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
MGT 4101			Introduction to Business and Management 1	3
SOC 4100			Introduction to Sociology: Fundamental Issues	3
SOC 4101			Introduction to Sociology: The Individual and Social Roles	3
or			or	or
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
RAD 4300	RAD 4301		Advanced Radiologic Technology 1†, 2†	6
RAD 4302			Imaging Modalities†	3
RAD 4303			Radiation Protection and Radiobiology†	3
MIS 4101			Introduction to Data Processing and Information Systems 1	3

Total Credits 101

* Prerequisite: Satisfactory completion of a certificate program in Radiologic Technology or registration by the American Registry of Radiologic Technologists.
† Courses will be scheduled for late afternoons for certificate students desiring to continue for the A.S. degree.

Therapeutic Recreation Services

Therapeutic Recreation, which is concerned with the revitalization of the mind, spirit, and skills of people in rehabilitation facilities, community settings, nursing homes, and hospitals, has emerged as an important part of the team concept in human services.

The certificate represents that the criteria set by the program's consultant have been met and that a basic level of competence to contribute to this field has been attained. At present there is no official state licensing board for Therapeutic Recreation practitioners to give the certificate public standing; it is recognized, however, by the Massachusetts Recreation and Park Association in its professional registration plan.

The certificate and associate degree program in University College include individual case studies, group dynamics, and motivational techniques, as well as field practicum experiences.

The associate degree program in therapeutic recreation has been designed to accommodate students who elect to pursue a B.S. degree in health management or sociology.

Curriculum

quarter hours

I. Certification—38 quarter hours	
Required professional courses	18
Required practicum	8
Required skill electives	6
Required professional electives	6
II. Associate Degree—97 quarter hours	
Required professional courses	18
Required practicum	8
Required professional electives	24
Required core courses	47

The professional courses in the Therapeutic Recreation curriculum are generally offered only at the Boston Campus with the exception of REC 4460, REC 4110, REC 4111, REC 4112, REC 4300, REC 4301, and REC 4302.

Therapeutic Recreation Services (Major Code 601)

Activity Leader Certificate Program

quarter hours

Required

ENG 4110	English 1	3
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Professional Courses—Required

REC 4101	REC 4102	REC 4103	Principles and Practices of Therapeutic Recreation 1, 2, 3	9
REC 4110	REC 4111		Group Dynamics and Leadership 1, 2	6
REC 4500	REC 4501		Field Practicum in Therapeutic Recreation 1, 2*	8
or			or	or
REC 4802	REC 4803		Independent Study 1, 2†	8

*See course description for practicum prerequisites. The appropriateness of being given a practicum assignment will be determined by the Program Consultant or Coordinator. Petitions may be obtained in 102 Churchill Hall.

†Permission is required for this option.

Skill Electives

Select 6 q.h. from the following:

REC 4310		Social Recreation	3
REC 4311		Music Therapy	3
REC 4300	REC 4301	Arts and Crafts 1, 2	6
REC 4312		Media Resources and Techniques	3
REC 4313		Therapeutic Use of Dramatics	3

Professional Electives

Select 6 q.h. from the following:

REC 4460	The Process of Aging	3
REC 4401	The Nursing Home Experience	3
REC 4410	Therapeutic Recreation in Rehabilitation	3
REC 4461	Camping for the Disabled	3
REC 4425	Mental Illness and Retardation	3
REC 4430	Therapeutic Recreation in Child Development	3
REC 4462	Leisure Counseling	3
REC 4440	Humanistic Approaches to Recreational Therapy	3
REC 4445	Community Recreation for the Handicapped	3

Total Credits**38****Recommended Course Sequence for Certificate Program**

Beginning Courses

ENG 4110			English 1
REC 4101	REC 4102	REC 4103	Principles and Practices of Therapeutic Recreation 1, 2, 3
REC 4110	REC 4111		Group Dynamics 1, 2

May be taken after completing ENG 4110 and REC 4101.

REC 4310	REC 4311	REC 4300	Social Recreation, Music Therapy, Arts and Crafts 1
REC 4301	REC 4312	REC 4313	Arts and Crafts 2, Media Resources and Techniques, Therapeutic Use of Dramatics
REC 4460	REC 4401	REC 4425	Process of Aging, Nursing Home Experience, Mental Illness and Retardation

Advanced Courses

REC 4410			Therapeutic Recreation in Rehabilitation
REC 4461			Camping for the Disabled
REC 4430			Therapeutic Recreation in Child Development
REC 4462			Leisure Counseling
REC 4440			Humanistic Approach to Recreational Therapy
REC 4445			Community Recreation for the Handicapped
REC 4500	REC 4501		Field Practicum 1, 2
REC 4802	REC 4803		Independent Study 1, 2

Therapeutic Recreation Services (Major Code 600) Associate in Science Degree

quarter hours

Required Professional Courses

REC 4101	REC 4102	REC 4103	Principles and Practices of Therapeutic Recreation 1, 2, 3	9
REC 4110	REC 4111		Group Dynamics and Leadership 1, 2	6
REC 4420			Activity and Movement Analysis	3
REC 4500	REC 4501		Field Practicum in Therapeutic Recreation 1, 2*	8
or			or	or
REC 4802	REC 4803		Independent Study 1, 2†	8

*See course description for practicum prerequisites. The appropriateness of being given a practicum assignment will be determined by the academic adviser.
 Petitions may be obtained in 102 Churchill Hall.

†Permission is required for this option.

Skill and Professional Electives

Select 24 quarter hours from skill electives listings and professional electives listings in certificate program. 24

Required Core Courses

PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
BIO 4103	BIO 4104		Biology 1, 2	8
BIO 4175	BIO 4176	BIO 4177	Anatomy and Physiology 1, 2, 3	9
SOC 4225			Social Gerontology	3
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)	9
HRA 4302			Medical Terminology Survey	3
HSC 4301	HSC 4302		Foundations of Medical Science 1, 2	6

Total Credits **97**

Recommended Course Sequence for Associate in Science Degree

Beginning Courses

BIO 4103	BIO 4104		Biology 1, 2
ENG 4110	ENG 4111	ENG 4112	English 1, 2, 3 (required prior to matriculation)
REC 4101	REC 4102	REC 4103	Principles and Practices of Therapeutic Recreation 1, 2, 3
REC 4110	REC 4111		Group Dynamics 1, 2
May be taken after completing prerequisite courses ENG 4110 and REC 4101:			
REC 4310	REC 4311		Social Recreation, Music Therapy
REC 4300	REC 4301	REC 4302	Arts and Crafts 1, 2; Arts and Crafts (Intensive)
REC 4312	REC 4313		Media Resources and Techniques; Therapeutic Use of Dramatics
REC 4460	REC 4401	REC 4410	Process of Aging, Nursing Home Experience, Mental Illness and Retardation

Advanced Courses

BIO 4175	BIO 4176	BIO 4177	Anatomy and Physiology 1, 2, 3
PSY 4410			Introduction to Psychology: Fundamental Issues
PSY 4111			Introduction to Psychology: Developmental Aspects
PSY 4112			Introduction to Psychology: Personal Dynamics
SOC 4225			Social Gerontology
REC 4500	REC 4501		Field Practicum 1, 2
REC 4802	REC 4803		Independent Study 1, 2
REC 4410			Therapeutic Recreation in Rehabilitation
REC 4461			Camping for the Disabled
REC 4430			Therapeutic Recreation in Child Development
REC 4462			Leisure Counseling
REC 4440			Humanistic Approach to Recreational Therapy
REC 4445			Community Recreation for the Handicapped
May be taken after completing prerequisite course BIO 4175:			
REC 4420			Activity and Movement Analysis
HRA 4302			Medical Terminology Survey
HSC 4301	HSC 4302		Foundations of Medical Science 1, 2

Dental Assistant Program

Northeastern University offers the Dental Assistant Program in collaboration with Tufts University School of Dental Medicine and other local clinical facilities. The program consists of thirty-seven weeks of full-time day instruction, with both lectures and laboratory sessions conducted at Northeastern University.

Accredited by the Commission of Accreditation of Dental and Dental Auxiliary Education Programs, the program helps students prepare for the certification examination conducted by the Dental Assisting National Board.

Students who successfully complete the program and pass the certification examination may petition for academic credit to be applied toward

the Bachelor of Science degree program in Health Science offered by University College. Credits may also be applied toward the Bachelor of Science in Education degree in the School and Community Health Education program offered by Northeastern's Boston-Bouvé College of Human Development Professions.

To receive detailed information and an application form, please contact:
Director
Dental Assistant Program
244 Forsyth Building
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115

Certificate Programs

Many persons who enroll in University College are seeking specific, job-related skills rather than the traditional course sequence of a degree program. To help meet such educational needs, University College offers a variety of certificate programs in business, arts and sciences, and law enforcement.

Certificate programs in University College are designed for:

- students planning to complete an associate degree but who first want to acquire the marketable skills offered in certificate programs
- individuals seeking an intensive course of study in a discipline but who do not wish to acquire a degree
- individuals already holding a degree but who wish to acquire a specialized body of knowledge for career change or professional development

All certificate programs, except American Sign Language, are designed so that transfer into a related degree program is possible. In addition, a limited amount of transfer credit for introductory courses taken at another college or university may be applied toward fulfilling the requirements for a certificate. Transfer students who have already completed upper-level courses that duplicate those required for a particular certificate may complete the certificate in question by substituting other upper-level courses in the same or a related discipline. The number of transfer credits permitted varies by certificate. Therefore, please check the curriculum for the individual certificate in which you are interested.

An individual may be awarded only two certificates. These certificates may be in related or totally distinct subject areas. Students who choose to complete a second certificate in a subject area that is related to their first certificate will often find that the two certificate programs have certain courses in common. In no instance, however, will a second certificate be awarded if more than 50 percent of the course work applicable to that certificate has already been used to fulfill the requirements for a first certificate.

Students who are already pursuing an associate or bachelor's degree in a specialized academic area should not complete a certificate

program in the same area. Instead, degree students are encouraged to use a certificate program to acquire job-related skills in an area not covered in depth by the requirements of their major.

On occasion, students may have good reasons for requesting permission to replace a required course in a certificate program with a substitute course. Permission to substitute a course must be granted by the appropriate Program Office. Students should submit a completed Petition for Course Substitution and Waivers to the appropriate Program Office. Petitions are available in 102

Churchill Hall on the Boston campus and at all suburban campus offices.

All course credits used to fulfill the requirements for a certificate program must reflect academic work completed within five years prior to the date on which the certificate is awarded.

Upon completion of a certificate program, students must submit a petition requesting a certificate. Petitions are available in 102 Churchill Hall or at the administrative offices at our off-campus locations. For further information concerning a particular certificate program, please call the telephone number listed with that program.

Arts and Sciences

Advertising and Public Relations		Certificate Program
		quarter hours
ART 4143	Advertising Design	3
ART 4364	Design and Production of Promotional Publications	3
JRN 4112	Fundamentals of Newswriting	3
JRN 4335	Public Relations Basics	3
JRN 4336	Public Relations Practices	3
JRN 4337	Public Relations Problems	3
JRN 4349	Advertising Basics	3
MKT 4301	Introduction to Marketing 1	3
SPC 4251	Business and Professional Speaking	3
Total Credits (Possible Transfer Credit: 9 q.h.)		27

For further information, call 617-437-2416.

American Sign Language		Certificate Program
		quarter hours
ASL 4101	ASL 4102	American Sign Language 1, 2
ASL 4201	ASL 4202	Intermediate American Sign Language 1, 2
ASL 4402		American Deaf Culture
ASL 4404		Linguistics of American Sign Language
ASL 4501	ASL 4502	Sign Language Interpreting 1, 2
Total Credits (All credits must be completed in residence.)		32

For further information, call 617-437-2416.

Gerontology**Certificate Program**

		quarter hours
DRA 4101	Introduction to Theatre	3
FI 4101	Personal Finance	3
HSC 4610	Geriatric Nutrition	3
PHL 4220	Meaning of Death	3
POL 4375	Consumer Advocacy 1	3
PSY 4242	Developmental Psychology: Adulthood and Old Age	3
REC 4460	The Process of Aging	3
SOC 4225	Social Gerontology	3
SOC 4240	Sociology of Human Service Organizations	3

Total Credits (Possible Transfer Credit: 9 q.h.)**27**

For further information, call 617-437-2416.

Graphic Design and Communication**Certificate Program**

		quarter hours
ART 4120	Graphic Communication and Production	3
ART 4141 ART 4142	Graphic Design 1, 2	6
ART 4143	Advertising Design	3
ART 4258	Advanced Graphic Design	3
ART 4364	Design and Production of Promotional Publications	3
ART 4365	Design and Production of Technical Publications	3
JRN 4349	Advertising Basics	3
TCC 4330	The Business and Technical Presentation	3

Total Credits (Possible Transfer Credit: 9 q.h.)**27**

For further information, call 617-437-2416.

Software Technical Writing**Certificate Program**

		quarter hours
ART 4140	Graphic Communication and Production	3
MIS 4101 MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
TCC 4101 TCC 4102	Technical Writing 1, 2	6
TCC 4105	Editing for Science and Technology	3
TCC 4301 TCC 4302	Computer Software Technical Writing 1, 2	6

Choose one computer language from the following:

MIS 4220	Introduction to Programming in COBOL	3
MIS 4240	Introduction to Programming in BASIC	3
MIS 4250	FORTTRAN Programming 1	3
MIS 4270	PASCAL Programming 1	3

Total Credits (Possible Transfer Credit: 9 q.h.)**27**

For further information, call 617-437-2416.

Song Writing				Certificate Program	quarter hours
ENG 4357				Creative Writing: Poetry	3
MUS 4110				Music in Popular Culture	3
or				or	or
MUS 4165				The Music Industry	3
MUS 4201				Fundamentals of Music Theory	4
MUS 4202	MUS 4203			Music Theory 1, 2	8
MUS 4241				Piano Class 1	3
or				or	or
MUS 4247				Guitar Class 1	3
MUS 4254	MUS 4255	MUS 4256		Music Tutorial in Song Writing/Arranging 1, 2, 3	9
Total Credits (Possible Transfer Credit: 9 q.h.)					30
For further information, call 617-437-2416.					

Speech Communication				Certificate Program	quarter hours
SPC 4101	SPC 4102	SPC 4103		Effective Communication 1, 2, 3	9
SPC 4111				Voice and Articulation 1	3
SPC 4150				Self-Concept and Communication	3
SPC 4151				Listening	3
SPC 4152				Interviewing	3
SPC 4201				Argumentation and Discussion	3
SPC 4251				Business and Professional Speaking	3
Total Credits (Possible Transfer Credit: 9 q.h.)					27
For further information, call 617-437-2416.					

Writing				Certificate Program	quarter hours
ENG 4349	ENG 4350			Expository and Persuasive Writing 1, 2	6
ENG 4352				Expository Communications	3
ENG 4359				Creative Writing Workshop	3
ENG 4362				Book Publishing	3
JRN 4112				Fundamentals of Newswriting	3
JRN 4113				Newsgathering and Reporting	3
TCC 4101	TCC 4102			Technical Writing 1, 2	6
Total Credits (Possible Transfer Credit: 9 q.h.)					27
For further information, call 617-437-2416.					

Business Administration

Accounting				Certificate Program
				quarter hours
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
ACC 4301	ACC 4302	ACC 4303	Intermediate Accounting 1, 2, 3	9
ACC 4310			Cost Accounting 1	3
FI 4301			Principles of Finance	3
Total Credits (Possible Transfer Credit: 9 q.h.)				24

For further information, call 617-437-2418.

Computer Programming and Systems Analysis				Certificate Program
				quarter hours
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MIS 4221	MIS 4222	MIS 4223	COBOL Programming 1, 2, 3	9
MIS 4241	MIS 4242		Programming in BASIC 1, 2	6
MIS 4301	MIS 4302	MIS 4303	Systems Analysis and Design 1, 2, 3	9
Total Credits (Possible Transfer Credit: 12 q.h.)				30

This certificate differs from the Computer Systems Specialist Program (see page 129) in that the courses in this certificate are offered at all campuses at regularly scheduled times and may be completed over a longer period of time than the Specialist Program. For further information about the Computer Systems Specialist Program, call 617-437-2407.

Finance				Certificate Program
				quarter hours
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
FI 4301			Principles of Finance	3
FI 4302	FI 4303		Financial Management 1, 2	6
FI 4310			Investment Principles	3
Total Credits (Possible Transfer Credit: 9 q.h.)				21

For further information, call 617-437-2418.

Hotel and Restaurant Management				Certificate Program
				quarter hours
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
HTL 4301			Introduction to Hotel and Restaurant Management	3
HTL 4303			Front Office Management	3
HTL 4305	HTL 4306		Food Preparation 1, 2	6
HTL 4309			Managerial Accounting for the Hospitality Industry	3
Total Credits (Possible Transfer Credit: 9 q.h.)				21

For further information, call 617-437-2418.

Human Resources Management			Certificate Program	
			quarter hours	
HRM 4301		Organizational Behavior*	3	
HRM 4302		Introduction to Human Resources Management*	3	
HRM 4303		Applied Human Resources Management*	3	
HRM 4310	HRM 4311	Personnel Management 1, 2	6	
HRM 4340		Public Sector Collective Bargaining in the U.S.	3	
or		or	or	
HRM 4341		Private Sector Collective Bargaining in the U.S.	3	
HRM 4330	HRM 4331	Employment Rights 1, 2	6	
Total Credits (Possible Transfer Credit: 9 q.h.)			24	

For further information, call 617-437-2418.

Marketing			Certificate Program	
			quarter hours	
MKT 4301	MKT 4302	Introduction to Marketing 1, 2	6	
MKT 4310	MKT 4311	Advertising and Sales Promotion Management 1, 2	6	
MKT 4315	MKT 4316	Sales Management 1, 2	6	
MKT 4320	MKT 4321	Marketing Management 1, 2	6	
Total Credits (Possible Transfer Credit: 9 q.h.)			24	

For further information, call 617-437-2418.

Purchasing			Certificate Program	
			quarter hours	
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
MGT 4101			Introduction to Business and Management 1	3
IM 4314			Production Control and Inventory Management 1	3
PUR 4351	PUR 4352		Purchasing 1, 2	6
PUR 4357			The Art and Technique of Negotiation in Business	3
PUR 4358			Materials Requirement Planning	3
Total Credits (Possible Transfer Credit: 9 q.h.)			27	

For further information, call 617-437-2418.

Transportation and Physical Distribution Management			Certificate Program	
			quarter hours	
MGT 4101			Introduction to Business and Management 1	3
TRN 4301			Elements of Transportation	3
TRN 4302			Physical Distribution Management	3
TRN 4305			Traffic Management 1	3
TRN 4316			Carrier Management	3
TRN 4321			Transportation Regulation 1	3
Total Credits (Possible Transfer Credit: 9 q.h.)			18	

For further information, call 617-437-2418.

Law Enforcement

Law Enforcement		Certificate Program	quarter hours
LEN 4100	LEN 4101	Criminal Investigation and Case Preparation 1, 2	6
LEN 4303	LEN 4304	Interviews and Interrogations 1, 2	6
LEN 4132	LEN 4133	Administration of Justice 1, 2	6
LEN 4152		Domestic Violence	3
LEN 4134	LEN 4135	Civil Law in Criminal Justice 1, 2	6
LEN 4340	LEN 4341	Civil Liberties and the Police 1, 2	6
Total Credits			33

In the Law Enforcement Certificate Programs, 6 to 9 quarter hours of credit may be accepted for introductory courses taken at another college or university. In the upper-level course category, a substitution arrangement can be made for courses previously completed at another educational program. For further information, call 617-437-3324.

Correctional Practices		Certificate Program	quarter hours
LEN 4300		Human Rights in Corrections	3
LEN 4302		Correctional Counseling	3
LEN 4312	LEN 4313	Treatment of Offenders 1, 2	6
LEN 4115	LEN 4116	Correctional Administration 1, 2	6
LEN 4317	LEN 4318	Probation and Parole Practices 1, 2	6
LEN 4120	LEN 4121	Juvenile Corrections 1, 2	6
Total Credits			30

For further information, call 617-437-3324.

Criminal Justice		Certificate Program	quarter hours
LEN 4315	LEN 4316	Criminology 1, 2	6
LEN 4132	LEN 4133	Administration of Justice 1, 2	6
LEN 4113	LEN 4114	Social Deviance 1, 2	6
LEN 4128		Seminar in Law Enforcement–Victimology	3
LEN 4129		Seminar in Law Enforcement–Criminal Behavior	3
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
Total Credits			30

For further information, call 617-437-3324.

Social Problems and Law Enforcement**Certificate Program**

		quarter hours
LEN 4118	Police Work with Juveniles	3
LEN 4119	Delinquency Prevention	3
LEN 4145	Alcohol Problems in Law Enforcement	3
LEN 4152	Domestic Violence	3
LEN 4343	Seminar in Law Enforcement—Mental Health and the Police	3
LEN 4336	Seminar in Law Enforcement—Minorities and the Urban Crisis	3
LEN 4328	Seminar in Law Enforcement—Youth Crime Control	3
LEN 4311	Research Methods in Criminal Justice	3
LEN 4130	Seminar in Law Enforcement—Drug Abuse	3
LEN 4146	Hazardous Materials	3
Total Credits		30

For further information, call 617-437-3324.

Legal Concepts in Law Enforcement**Certificate Program**

			quarter hours
LEN 4136	LEN 4137	Criminal Law 1, 2	6
LEN 4138	LEN 4139	Evidence and Court Procedure 1, 2	6
LEN 4134	LEN 4135	Civil Law in Criminal Justice 1, 2	6
LEN 4332	LEN 4333	Man, Law, and Society 1, 2	6
LEN 4307		The Law and Institutional Treatment	3
LEN 4142		Massachusetts Criminal Law	3
Total Credits			30

For further information, call 617-437-3324.

Law Enforcement Administration**Certificate Program**

			quarter hours
LEN 4319	LEN 4320	Law Enforcement Management and Planning 1, 2	6
LEN 4132	LEN 4133	Administration of Justice 1, 2	6
LEN 4314		Police Supervision	3
LEN 4342		Seminar in Law Enforcement—Executive Development	3
LEN 4344		Law Enforcement Fiscal Management	3
LEN 4131		Seminar in Law Enforcement—Data Processing	3
LEN 4102		Comparative Police Systems	3
LEN 4331		Seminar in Law Enforcement—Collective Bargaining	3
Total Credits			30

For further information, call 617-437-3324.

Loss Prevention and Security Administration			Certificate Program	
			quarter hours	
LEN 4147			Legal Aspects of Security Operations	3
LEN 4322	LEN 4323		Physical Security 1, 2	6
LEN 4144	LEN 4145		Security Administration 1, 2	6
LEN 4103			Introduction to Industrial Security	3
LEN 4102			Industrial Fire Prevention	3
LEN 4140	LEN 4141		Fire Investigation and Arson 1, 2	6
LEN 4146			Hazardous Materials	3
LEN 4123			Retail Security	3
LEN 4325			Hospital Security	3
Total Credits				36

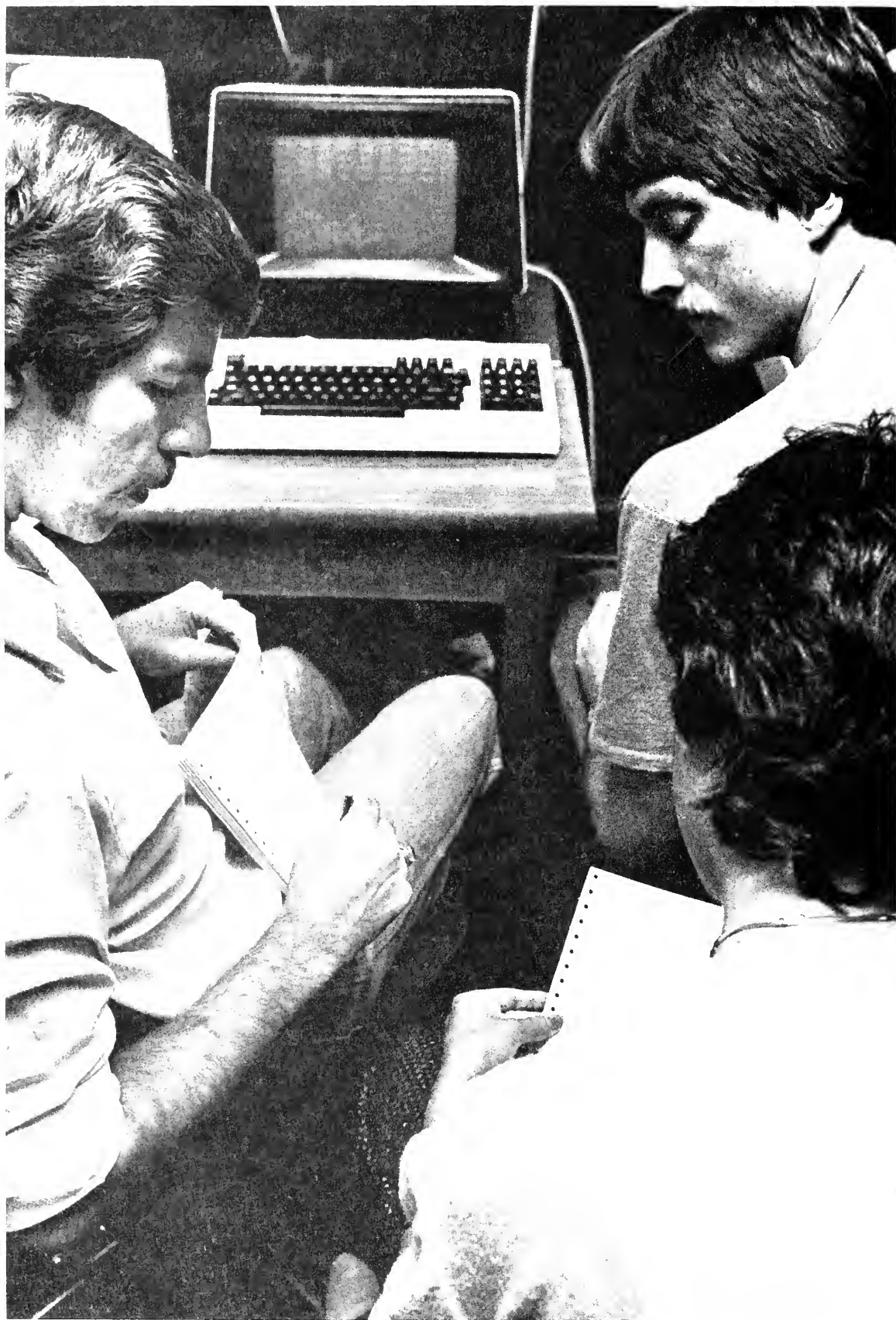
For further information, call 617-437-3324.

Law, Policy, and Society			Certificate Program	
			quarter hours	
LEN 4149	LEN 4150	LEN 4151	Logical and Ethical Foundations of Decision Making 1, 2, 3	9
LEN 4132	LEN 4133		Administration of Justice 1, 2	6
LEN 4332	LEN 4333		Man, Law, and Society 1, 2	6
LEN 4303	LEN 4304		Interviews and Interrogations 1, 2	6
LEN 4307			The Law and Institutional Treatment	3
Total Credits				30

For further information, call 617-437-3324.

Forensic Science			Certificate Program	
			quarter hours	
LEN 4110	LEN 4111		Introduction to Criminalistics 1, 2	6
LEN 4338			Seminar in Law Enforcement: Forensic Laboratory	3
LEN 4100	LEN 4101		Criminal Investigation and Case Preparation 1, 2	6
LEN 4326	LEN 4327		Law Enforcement Mathematics 1, 2	6
LEN 4315	LEN 4316		Criminology 1, 2	6
LEN 4138	LEN 4139		Evidence and Court Procedure 1, 2	6
Total Credits				33

For further information, call 617-437-3324.



Computer Systems Specialist Program

The Program

The Computer Systems Specialist Program is designed to offer students an opportunity to acquire training as computer systems specialists. Intended for students who are interested in entry-level programming positions in business and industry, the program is structured to help meet the career goals of individuals who presently have minimal or no academic or work-related background in computer programming.

Admission College Board Examinations are not required for admission. For purposes of evaluation for admission, however, a computer-programmer aptitude test will be administered to applicants who successfully complete the initial screening process. Enrollment is limited. Further, the decision to offer this program is contingent upon a sufficient number of qualified candidates.

Days, Dates, Times, and Places The program is scheduled twice during the academic year, in October and April. Classes are scheduled for thirty weekends: on Fridays, from 6:00 to 10:00 p.m., and all day Saturdays, from 9:00 a.m. to 5:00 p.m. All classes will be held at the Northeastern Campus in Burlington, Massachusetts.

Course Content Course content includes the following:

			quarter hours
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
MIS 4231	MIS 4232	COBOL Programming A and B	12
MIS 4345		Data Base Systems	3
MIS 4241	MIS 4242	Programming in BASIC 1, 2	6
MIS 4301	MIS 4302	Systems Analysis and Design 1, 2, 3	9
MIS 4304	MIS 4303	Systems Analysis and Design 4	3
Total Credits			45

Academic Credit and Certification Upon satisfactory completion of the program, students will have accumulated forty-five quarter hours of academic credit. These credits represent 26 percent of the credits necessary for a bachelor's degree. Students satisfactorily completing the program will also receive a certificate in programming.

Placement Assistance

Although job placement is not guaranteed, most students who successfully complete the program find suitable employment. Specific placement services include individual counseling; job-search seminars on career opportunities, self-assessment, job search, résumé preparation, and interviewing skills; and résumé referrals to employers.

Application Form and Further Information

For further information about the program and program costs and an application form, contact the Business Administration Program Office, Northeastern University, University College, 203 Churchill Hall, 360 Huntington Avenue, Boston, Massachusetts 02115, telephone 617-437-2418.

Program Consultants and Coordinators

Business Administration

ACC: Accounting

Consultant: Prof. Paul A. Janell (437-4645)
Associate Consultant (Accounting Principles): Dean
 Walter E. Kearney, Jr. (437-2312)
Associate Consultant: Prof. Richard Keith (437-4650)

FI: Finance

Consultant: Prof. Robert J. Hehre (437-4642)
Consultant: Prof. Jonathan Welch (437-4572)
Associate Consultant: Mr. William F. Hancock, Jr.
 (496-9497)

HTL: Hotel and Restaurant Management

Consultant: Mr. Donald A. Witkoski (362-2131 x361)

HRM: Human Resources Management

Consultant: Prof. Christine L. Hobart (437-4728)
Associate Consultant: Mr. Ronald E. Guittarr
 (475-8382)
Associate Consultant: Mr. Daniel F. Hurley (785-0484)

IM: Industrial Management

Consultant: Prof. Robert A. Parsons (437-4749)
Consultant: Mr. Joel M. Rosenfeld (491-9200)
Associate Consultant: Mr. James D. Mukjian
 (451-4120)

BL: Business Law

Consultant: Thomas J. Ahern, Esq. (426-4211)

MGT: Management

Consultant: Prof. Daniel McCarthy (437-3255)
Associate Consultant: Mr. W. Arthur Gagne (753-8406)
Associate Consultant: Mr. Robert L. Goldberg
 (421-2602)

MIS: Management Information Systems

Consultant: Prof. Victor Godin (437-4801)
Consultant: Mr. Thomas J. McNamara (895-6047)
Associate Consultant (Systems): Mr. Norman J.
 Conklin (671-7502)
Associate Consultant (EDP): Mr. Thomas M. Kelly
 (726-2275)
Associate Consultant (Programming): Mr. Jeremiah
 Sullivan (443-3122)
Coordinator (Programming): Mr. Andrew E. Efstathiou
 (727-6524)
Coordinator (Programming): Mr. Bennett L. Kramer
 (588-9100 x208)

MKT: Marketing

Consultant: Prof. Dan T. Dunn, Jr. (437-4563)
Associate Consultant: Mr. George S. Hennessy
 (371-1400)

PUR: Purchasing

Associate Consultant: Mr. Gerald E. Maguire
 (655-8000 x7724)

MS: Quality Control and Management Sciences

Consultant: Prof. Robert A. Parsons (437-4749)
Consultant: Mr. Cephas Rogers (493-6972)

RE: Real Estate

Consultant: Mr. Leo M. Flynn (927-3406)

TRN: Transportation and Physical Distribution Management

Consultant: Prof. James F. Molloy (437-4812)

Humanities and Social Sciences

ART: Arts (Arts, or Media and Graphic Communication)

Consultant: Prof. Samuel S. Bishop, Art Dept. (College
 of Arts and Sciences)

ASL: American Sign Language

Coordinator: Ms. Cathy Cogen, Director of ASL
 Program (College of Arts and Sciences)

DRA: Theatre Arts

Consultant: Prof. Ingrid H. Sonnichsen, Drama Dept.
 (College of Arts and Sciences)

ECN: Economics

Consultant: Prof. M. A. Horowitz, Chairman,
 Economics Dept. (College of Arts and Sciences)
Associate Consultant: Prof. H. Goldstein, Executive
 Officer, Economics Dept. (College of Arts and
 Sciences)
Coordinator: Mr. Herbert J. Eskot, Economics Dept.
 (College of Arts and Sciences)

ENG: English (Literature or Writing)

Consultant: Prof. M. X. Lesser, English Dept. (College
 of Arts and Sciences)

HST: History

Consultant: Prof. Raymond H. Robinson, Chairman,
 History Dept. (College of Arts and Sciences)
*Coordinator of Western Civilization and Adviser to
 History Majors:* Prof. Gerald H. Herman, History
 Dept. (College of Arts and Sciences)

JRN: Journalism, Public Relations or Advertising

Consultant: Prof. Larue W. Gilleland, Chairman,
 Journalism Dept. (College of Arts and Sciences)

LN: Modern Languages

Consultant: Prof. Holbrook Robinson, Chairman,
Modern Languages Dept. (College of Arts and
Sciences)

Modern Languages include the following:

LNA: Arabic
LNF: French
LNG: German
LNI: Italian
LNJ: Japanese
LNN: Swedish
LNS: Spanish

LIB: Library Systems

Consultant: Mr. Frank Seegraber, Boston College

MUS: Music

Consultant: Prof. Joshua R. Jacobson, Music Dept.
(College of Arts and Sciences)

Adviser Coordinator: Mr. Charles Mokotoff

PHL: Philosophy and Religion

Consultant: Prof. E. Hacker, Philosophy Dept. (College
of Arts and Sciences)

POL: Political Science

Consultant: Prof. R. L. Cord, Political Science Dept.
(College of Arts and Sciences)

Major Adviser: Prof. R. L. Cord

PSY: Psychology

Consultant: Prof. Charles Karis, Psychology Dept.
(College of Arts and Sciences)

Associate Consultant: Prof. Harold Zamansky,
Psychology Dept. (College of Arts and Sciences)

SOC-SOA: Sociology-Anthropology

Consultant: Prof. Eva C. Havas, Sociology Dept.
(College of Arts and Sciences)

Major Adviser/Associate Consultant: Prof. Thomas
Shapiro, Sociology Dept. (College of Arts and
Sciences)

Sociology-Anthropology program includes courses in:
SOA: Anthropology and SOC: Sociology

SPC: Speech Communication

Consultant: Prof. M. L. Woodnick, Speech
Communications Dept. (College of Arts and
Sciences)

TCC: Technical Communications

Consultant: Mr. Neil F. Duane, Boston Documentation
Design

Law Enforcement

LEN: Correctional Practices

Consultant: Mr. Richard DeBoer, Jr. (Deputy Sheriff,
Barnstable County, Massachusetts)

Consultant: Howard R. Palmer, Esq. (Assistant
Attorney General, Commonwealth of Massachusetts)

Consultant: Carmen S. Pizzuto, Ph.D. (Director,
Classification Bureau, Department of Youth
Services, Commonwealth of Massachusetts)

LEN: Law Enforcement

Coordinator: Mr. Richard DeBoer, Jr. (Deputy Sheriff,
Barnstable County, Massachusetts)

Consultant: Mr. Francis R. Hankard (Assistant Chief of
Laboratory, Massachusetts Department of Public
Safety, Commonwealth of Massachusetts)

Consultant: Mr. Joseph M. Jordan (Commissioner,
Boston Police Department, Boston, Massachusetts)

Consultant: Howard R. Palmer, Esq. (Assistant
Attorney General, Commonwealth of Massachusetts)

Consultant: Carmen S. Pizzuto, Ph.D. (Director,
Classification Bureau, Department of Youth
Services, Commonwealth of Massachusetts)

LEN: Security

Consultant: Mr. Francis R. Hankard (Assistant Chief of
Laboratory, Massachusetts Department of Public
Safety, Commonwealth of Massachusetts)

Consultant: Mr. Robert F. Johnson (President, First
Security Services Corporation, Boston,
Massachusetts)

Consultant: Howard R. Palmer, Esq. (Assistant
Attorney General, Commonwealth of Massachusetts)

Health Professions

DTA: Dental Assistant

Program Director: (University College) (437-2829)

HMG: Health Management

Program Coordinator: Office of Health Professions and
Science Programs (University College) (437-2819)

HRA: Health/Medical Records Administration

Program Director: Prof. Judith Weilerstein (College of
Pharmacy and Allied Health Professions) (437-4204)

Program Coordinator: Ms. Annalee Collins (College of
Pharmacy and Allied Health Professions) (437-2525)

HSC: Health Science

Program Coordinator: Dr. Theodore Blank
(Massachusetts Department of Public Health)
(727-1960)

MLS: Medical Laboratory Science

Program Director: Prof. Gerald L. Davis (College of
Pharmacy and Allied Health Professions) (437-3664)

Clinical Coordinator: Ms. Barbara Martin (College of
Pharmacy and Allied Health Professions) (437-4198)

NUR: Nursing

Academic Coordinator: Ms. Marcia DePace (University
College) (437-3029)

RAD: Radiologic Technology

Program Director: Mr. Stanley Bozen (University
College) (437-2818)

REC: Therapeutic Recreation

Program Director: Prof. Frank Robinson (Boston-Bouv 
College of Human Development Professions)
(437-3157)

Sciences

BIO: Biology

Consultant: Prof. Fred A. Rosenberg (College of Arts and Sciences) (437-4042)

Laboratory Coordinator: Mr. Jeffrey L. Wain (College of Arts and Sciences) (437-4046)

CHM: Chemistry

Consultant: Prof. Philip W. LeQuesne (College of Arts and Sciences) (437-2822)

Laboratory Coordinator: Mr. Bernard Lemire (College of Arts and Sciences) (437-2811)

Major Adviser Chemical-Biologic Technology: Ms. Paula Vosburgh (University College) (437-2819)

ESC: Earth Science

Consultant: Prof. David L. Wilmarth (College of Arts and Sciences) (437-3176)

MTH: Mathematics

Consultant: Mr. Joseph Hansen (Raytheon Corporation) (437-2819)

Course Coordinator for Basic Mathematics: Mr. Eugene Branca (University College) (437-2819)

Course Descriptions

Not all the courses listed in this bulletin will be offered. A final list of courses to be offered will be contained in the University College Schedule of Courses, which gives the hours, days, and location of classes. This schedule is issued prior to the Fall, Winter, Spring, and Summer quarters.

Note: As of the 1984–1985 academic year, Northeastern University instituted a new course numbering system that applies to all courses in the University. Continuing students should refer to the Glossary of New Course Numbers on pages 208–230 to be sure they do not register for courses they have already taken, but which now have new numbers.

Abbreviations

q.h.: quarter hours (credit earned)
cl.: hours required in class per week
Prereq.: Prerequisite

ACC 4101 Accounting Principles 1 (3 q.h.)

The basic concepts and methodology of accounting for service and merchandising businesses, and accounting for business assets.

ACC 4102 Accounting Principles 2 (3 q.h.)

Emphasizes financial reporting, income measurement, valuation and appraising the financial results of business operations. *Prereq.* ACC 4101.

ACC 4103 Accounting Principles 3 (3 q.h.)

The preparation and interpretation of cost accounting information and utilization of the information in the managerial decision-making process. Topics include cost-accounting systems, analysis of cost-volume relationships, fixed and variable costs, break-even analysis, standard costs, budgeting for planning and control, and capital budgeting. *Prereq.* ACC 4102.

ACC 4105 Accounting Principles 1 and 2 (Intensive) (6 q.h.)

Same as ACC 4101 and ACC 4102.

ACC 4110 Management Accounting for Nonprofit Organizations (3 q.h.)

An examination of the characteristics of management control in nonprofit organizations. A study of input-output measures, pricing, budgeting, and accounting control. (For non-accounting majors) *Prereq.* ACC 4102.

ACC 4120 Essentials of Personal Income Taxation (3 q.h.)

A special course designed for non-accounting majors. The course is designed to teach important aspects of personal income taxation on both the federal and state

levels. Tax laws, tax planning, and the preparation of individual returns are emphasized.

ACC 4301 Intermediate Accounting 1 (3 q.h.)

An introduction to financial accounting organizations, concepts, and techniques. Specific topics may include the development and framework of accounting theory and practice, alternative valuation models, and formal financial statements. *Prereq.* ACC 4103.

ACC 4302 Intermediate Accounting 2 (3 q.h.)

A detailed examination of assets. Specific topics may include cash, receivables, inventories, and property, plant, and equipment. *Prereq.* ACC 4301.

ACC 4303 Intermediate Accounting 3 (3 q.h.)

A comprehensive examination of leases, pensions and liabilities. *Prereq.* ACC 4302.

ACC 4304 Intermediate Accounting 4 (formerly Advanced Accounting 1) (3 q.h.)

An in-depth analysis of specialized problem areas in accounting. Topics may include earnings per share, revenue recognition, changes and errors, changing prices, and the statement of changes in financial position. *Prereq.* ACC 4303.

ACC 4306 Intermediate Accounting 1 and 2 (Intensive) (6 q.h.)

Same as ACC 4301 and ACC 4302. *Prereq.* ACC 4103.

ACC 4310 Cost Accounting 1 (3 q.h.)

The foundations of cost accounting, including terminology, purpose, relationship with financial accounting; familiarization with product costing systems and their usefulness. *Prereq.* ACC 4103.

ACC 4311 Cost Accounting 2 (3 q.h.)

Budgetary planning and control, with emphasis on the use of cost data for current operations, special decisions, and long-range planning. *Prereq.* ACC 4310.

ACC 4313 Cost Accounting 1 and 2 (Intensive) (6 q.h.)

Same as ACC 4310 and ACC 4311. *Prereq.* ACC 4103.

ACC 4320 Advanced Accounting 1 (formerly Advanced Accounting 2) (3 q.h.)

A comprehensive examination of the problems associated with business combinations. A study of the purchase and pooling methods of consolidations. *Prereq.* ACC 4304.

ACC 4321 Advanced Accounting 2 (formerly Advanced Accounting 3) (3 q.h.)

A study of the accounting problems associated with partnerships, installment sales and consignments, and

multinational corporations. A detailed examination of accounting for "not-for-profit-entities." *Prereq.* ACC 4320.

ACC 4325 Auditing 1 (3 q.h.)

The examination of auditing requirements relative to the professional ethics and legal responsibility of the certified public accountant. A study of the use of the computer in auditing and the utilization of statistical sampling techniques. *Prereq.* ACC 4303.

ACC 4326 Auditing 2 (3 q.h.)

The methods and approaches utilized in auditing aspects, liabilities, owners' equity, and nominal accounts of the firm. *Prereq.* ACC 4325.

ACC 4327 Auditing 1 and 2 (Intensive) (6 q.h.)

Same as ACC 4325 and ACC 4326. *Prereq.* ACC 4303.

ACC 4330 Internal Auditing 1 (3 q.h.)

Designed to aid in understanding how a modern internal audit function reviews and appraises diverse operations. Studies the audit organization, selection, and development of staff, preparation of long-range programs, performing preliminary surveys, and developing audit programs. Techniques of internal audit appraisal are examined. Topics may include regression analysis and statistical sampling. Case studies may be employed. *Prereq.* ACC 4303.

ACC 4331 Internal Auditing 2 (3 q.h.)

Continuation of the study of techniques of internal audit appraisal. Topics may include computers as an audit tool, auditor responsibilities, audit work papers, reports, reviews, replies, and management summaries. Case studies are employed. *Prereq.* ACC 4330.

ACC 4340 Federal Income Taxes 1 (3 q.h.)

The application of the federal tax laws to the individual's income, gains, losses, and expenses. A study of the individual's special deductions. *Prereq.* ACC 4303.

ACC 4341 Federal Income Taxes 2 (3 q.h.)

A study of some specialized tax problems related to the individual. Topics include installment sales and income averaging. A study of the application of the federal tax laws to the corporation. *Prereq.* ACC 4340.

ACC 4342 Federal Income Taxes 3 (3 q.h.)

A study of the application of the federal tax laws to the corporation. *Prereq.* ACC 4341.

ACC 4350 Seminar in Contemporary Accounting Problems 1 (3 q.h.)

The careful examination of the underlying concepts and conventions of accounting and their application to financial statements. An in-depth analysis of the areas of revenue and income recognition. *Prereq.* ACC 4311 and ACC 4304.

ACC 4351 Seminar in Contemporary Accounting Problems 2 (3 q.h.)

The examination of cost determination and allocation and depreciation. An in-depth study of specialized

areas, including such topics as pensions, leases, stock options, and earnings per share. *Prereq.* ACC 4350.

ART 4100 History of Art (formerly History of Art 1) (3 q.h.)

History of Western art from prehistoric times to the end of the Roman Empire. Will include the study of major monuments, artists, and stylistic developments that have evolved during the prehistoric, primitive, Egyptian, Mesopotamian, Aegean, Greek, and Roman periods. Slide lectures and discussions.

ART 4101 History of Art to the Sixteenth Century (formerly History of Art 2) (3 q.h.)

History of Western art from the end of the Roman Empire to the late sixteenth century. Will include the study of major monuments, artists, and stylistic developments that have evolved during the Early Christian, Byzantine, Early Medieval, Romanesque, Gothic, Early and High Renaissance, and late sixteenth-century Mannerist periods, and such artists as Michelangelo, da Vinci, and Raphael. Slide lectures and discussions.

ART 4102 History of Art to the Twentieth Century (formerly History of Art 3) (3 q.h.)

History of Western art from the late sixteenth century to the twentieth century. Will include the study of major monuments, artists, and stylistic developments that evolved during Baroque, Rococo, and nineteenth-century Europe (such as Renoir, Monet, and the Impressionists), and America (such as Winston and Homer), and twentieth-century Europe (such as Matisse and Picasso) and America (such as O'Keeffe, Pollack, and Wyeth). Slide lectures and discussions.

ART 4106 Introduction to Art (3 q.h.)

Introduction to the language, techniques, aesthetics, and visual styles of paintings, sculpture, graphic arts, and architecture. Will include individual and comparative studies of major works of art in each field; discussion of terminology; and examination of the social, political, and cultural significance of each art form historically. Slide lectures and discussions.

ART 4107 Introduction to the Great Museums of Europe (3 q.h.)

Designed to introduce students to the great museums of Europe and their collections. Through a slide lecture format the student will be introduced to the museums, their settings, and important examples from their collections. Museums that will be explored include the Egyptian Museum, Cairo; the National Museum, Athens; the Uffizzi and Pitti Museums, Florence; the Prado, Madrid; the Louvre, Paris; and the National Gallery, London.

ART 4121 Principles of Drawing and Composition (formerly Drawing) (3 q.h.)

Introduction to the fundamental principles of drawing and composition through formal graphic studies of line, shape, value, form, light, space, pattern, and texture. Use of pencil, charcoal, conte crayon, and other dry media will be stressed. Slide lectures and critiques as needed.

ART 4122 Introduction to Figure Drawing (formerly Color Drawing) (3 q.h.)

An introductory studio course in drawing the human form. Includes basic studies in anatomy, proportion, negative/positive space, contour, gesture, mass, line, composition, and drawing technique. Slide lectures, critiques, and weekly sessions drawing from the model.

ART 4123 Drawing Workshop (formerly Figure Drawing) (3 q.h.)

Introduction to more advanced problems in the analysis of visual language and its creative organization. Will include some location drawings and the creation of original compositions. Emphasis will be placed on strengthening drawing techniques and encouraging the development of a personal style.

ART 4127 Basic Painting (formerly Painting—Basic Level) (3 q.h.)

An introduction to the fundamentals of painting. Formal studio assignments in the study of color, light, pictorial space systems, form, texture, and composition to establish a foundation for more individual, creative expression. Critiques and slide lectures as needed.

ART 4128 Intermediate Painting (formerly Painting—Figure) (3 q.h.)

A brief review of the fundamental principles of painting, followed by more advanced studies in shape, scale, texture, brushstroke, and edge, as well as color, light, form, and composition. Problems in a variety of stylistic approaches and techniques, from both the past and present. Critiques and slide lectures as needed.

ART 4129 Painting Workshop (formerly Painting—Composition) (3 q.h.)

Emphasis will be on individual development within the framework of a structured, project-oriented approach. Recognition of the conceptual aspects of painting and development of a personal painting style and unique visual imagery will be encouraged. Critiques and slide lectures as needed.

ART 4130 Printmaking—Relief (formerly Graphic Arts—Woodcutting) (3 q.h.)

A fundamental course in the production of prints using the relief process. Will include woodcut techniques, linoleum and block cut techniques, as well as other relief print techniques. Will explore paper stocks, inks, carving techniques, and printing techniques.

ART 4131 Printmaking—Silkscreen (formerly Graphic Arts—Silkscreen) (3 q.h.)

A fundamental course in the production of prints using the stencil process. Will include the technique of the hand-cut film, brushed paper and blockouts, multi-color printing and registration, selections of inks and papers, stretching and preparing a screen.

ART 4132 Printmaking—Intaglio (formerly Graphic Arts—Etching) (3 q.h.)

A fundamental course in the production of prints using the intaglio process. Will include etching, aquatint, dry

point, engraving, sugar-lift, and other intaglio techniques. Focus will be on drawing and design skills and on understanding the printmaking craft.

ART 4133 Basic Color and Design (formerly Basic Color and Design 1) (3 q.h.)

An introduction to the principles of design and the science and art of color. Individual projects involve the student in perceiving, simplifying, and organizing basic images as structured form and space and in understanding the nature and properties of color and its expressive potential.

ART 4134 Color and Design Practice (formerly Basic Color and Design 2) (3 q.h.)

Intermediate-level problems in the aesthetic organization of color and design elements. Students will explore the expressive possibilities in color orchestration, color harmonies, light as color, and the spatial characteristics of color.

ART 4135 Contemporary Design (formerly Basic Color and Design 3) (3 q.h.)

Advanced workshop approach to color and design. Focus will be on individual solutions to specific color and design problems. Comparative studies of effective use of color and design in contemporary art.

ART 4136 Basic Watercolor Painting (formerly Watercolor Painting 1) (3 q.h.)

Practice and creative expression in the technical fundamentals of watercolor.

ART 4137 Watercolor Painting Practice (formerly Watercolor Painting 2) (3 q.h.)

Creative expression in various techniques of watercolor. *Prereq.* ART 4136 or permission of instructor.

ART 4138 Techniques of Watercolor Painting (formerly Watercolor Painting 3) (3 q.h.)

Advanced expression in watercolor. *Prereq.* ART 4137 or permission of instructor.

ART 4140 Graphic Communication and Production (3 q.h.)

Introduction to the wide range of graphics and technical illustration available and how to use them. Students have the opportunity to learn effective techniques of integrating graphic and written communication, as well as which pitfalls to avoid. An overview of the production process includes an introduction to lithography, screening, color techniques, composition, process camera, paper stocks, bindery methods, and economic factors.

ART 4141 Graphic Design 1 (formerly Basic Commercial Design) (3 q.h.)

Introduction to professional problem solving in graphic design communications. Study and creative work in design principles and their application, color, visual expression, basic concepts of layout, layout techniques and tools, design and graphic symbols, creative use of typography, and correlation of graphic forms and organization with content in communicating ideas.

ART 4142 Graphic Design 2 (formerly Commercial Design Practice) (3 q.h.)

Intermediate study and creative work in professional problem-solving in graphic design communications. Emphasis will be placed on creating an overall design concept. Students will design public graphic systems, exhibit graphics, corporate graphics, and explore effective problem-solving techniques and concept development methodology.

ART 4143 Advertising Design (formerly Commercial Design Problems) (3 q.h.)

Introduction to the environment, language, and design problems commonly met in the advertising field. Study and creative work in advertising layout, tools and techniques, use of color, color printing processes, typography, layout and design, preparation and client presentations, and the design of a variety of advertising literature pieces.

ART 4160 Basic Photography 1 (3 q.h.)

This course is intended to acquaint the beginning student with the camera, the negative, and the print. Weekly shooting assignments, demonstrations, and hands-on lab experience are part of this active, primary-level course. *Lab fee.*

ART 4161 Basic Photography 2 (3 q.h.)

A continuation of ART 4160, with more emphasis on combining personal aesthetic choices with refining darkroom skills. A final portfolio at the end of the course, as well as weekly shooting assignments, is required. *Prereq. ART 4160 or equiv. Lab fee.*

ART 4162 Photography Workshop (3 q.h.)

Through close interaction with the instructor, students are asked to refine their technical skills and to make meaningful decisions about their relation to the world around them through the use of photography. Alternative processes such as infrared, toners, and large format will be demonstrated and used. Contemporary trends in photography will be shown with frequent slide presentations. In short, a qualitative approach to substantive photography. *Prereq. ART 4161 or equiv. Lab fee.*

ART 4204 Italian Renaissance Art (3 q.h.)

A study of Italian painting, sculpture, and architecture of the fifteenth and sixteenth centuries, with special attention to their historical, cultural, and social contexts. Examination of the foundation of Renaissance ideals as reflected in a renewed interest in classical concepts of harmony and order and a new sense of self-awareness, individualism, and naturalism. In-depth study examines such artists as Giotto, Donatello, Botticelli, Michelangelo, da Vinci, Raphael, and Titian.

ART 4207 Chinese Painting (3 q.h.)

Will include work from the Ch'in and Han dynasties; the period of the Three Kingdoms; the Tang Dynasty; the Five Dynasties and Northern Sung; the Southern Sung, the Yuan, Ming, and Ch'ing Dynasties; as well as more recent developments of the twentieth century.

ART 4208 Japanese Art (3 q.h.)

A study of the development of Japanese painting, sculpture, and architecture from its inception through the twentieth century. Will include work from the Jomon period, the Suiko style, the Tang style (Nara and Early Heian), the Shinto shrines period, the Later Heian period, the Kamakura period, the Ashikaga period, the Momoyama period, as well as the work of more recent artists such as Hokusai and Hiroshige.

ART 4210 French Painting (3 q.h.)

A study of the development of French painting from the French Revolution up through the nineteenth century. Will include an examination of neoclassicism, romanticism, realism, impressionism, and post-impressionism, with a focus on such figures as: David, Delacroix, Courbet, Manet, Degas, Monet, Renoir, Cézanne, and Van Gogh. Will also include study of the French interest in the formal problems of painting and the painting process as distinct from its narrative content.

ART 4213 Modern Painting (3 q.h.)

A study of developments in painting from the late nineteenth century through the early 1930s. Will include an examination of major schools, movements, and artists from post-impressionism through surrealism (such as Van Gogh, Cézanne, and Dali). Focus will be on important shifts in painting concepts and the rise of innovative modes of expression instrumental in establishing the foundation of modernism.

ART 4214 Contemporary Painting (formerly Modern Painting 2) (3 q.h.)

A study of development in painting from the early 1940s to the present—major schools, movements, and artists. Focus will be on the cultural impact of the exodus of artists from Europe and their settlement in the United States prior to World War II; the meteoric rise of abstract expressionism and its international influence; and the rise of a diversity of movements, such as pop art, minimalism, conceptual art, and new realism since World War II.

ART 4217 Latin American Art (3 q.h.)

A survey of the development of architecture, sculpture, painting, and the decorative arts in Latin America from the pre-Columbian period to the present. Will include the study of the classic Maya and Toltec Maya of Central America and Mexico; the Aztecs of Mexico; the Moche, Masca, Tiahuanaco, Chimu, and Incas of South America; and the rise of national artistic directions in modern Latin America.

ART 4218 Mexican Art (3 q.h.)

A study of Mexican art from the archaic and classical periods of pre-Columbian art to the present. Will include the Olmec, northern Mayan, Toltec, and Aztec periods; the influence of Cortez and the Spaniards; the monumental social realism of Siqueiros, Rivera, and Orozco. Slide lectures and assigned readings.

ART 4219 American Indian Art (3 q.h.)

A survey of American Indian architecture, painting,

sculpture, and the minor arts and crafts from pre-Columbian cultures to the present. Will include the arts of Meso-America, the American Southwest, the Plains, the Northwest Coast, and the Eastern United States. Slide lectures and assigned readings.

ART 4220 American Painting and Sculpture

(formerly American Art 1) (3 q.h.)

A survey of American painting and sculpture from colonial times through the early 1930s. Will include the study of painting from itinerant colonial "limmers" through Copley, Benjamin West and the English tradition, the Hudson River School, Eakins, Hopper, Marin, Stella, O'Keeffe, and the founding of American modernist painting. Will also include a study of sculpture from colonial gravestone reliefs through Rush, Augur, and the public monuments of French and Saint-Gaudens. The course will end with Calder.

ART 4221 Women in Art and Women Artists (3 q.h.)

A study of women in the arts from prehistoric times to the present. Focus on the role of women as symbols, religious figures, erotic objects, and idealized images of femininity. Examples include fertility images, Venus images, madonnas, portraits, and genre works. Examination of the historical role of women as artists.

ART 4223 American Architecture (formerly American Art 2) (3 q.h.)

A survey of American architecture from the colonial period up through the early 1930s. Will include the study of the seventeenth-century Early American style, the eighteenth-century Georgian Style, the Republican style, mid-nineteenth-century period revival styles, the stick-and-shingle styles, Richardsonianism, Sullivan and the rise of the skyscraper and Frank Lloyd Wright.

ART 4228 Twentieth-Century Architecture (formerly American Art 3 and Twentieth-Century American and European Architecture) (3 q.h.)

A study of European and American architecture of the twentieth century. Will include an examination of Gropius's Bauhaus tenets concerning housing, urban planning, and utilitarian mass production; Mies van der Rohe, Le Corbusier, and the International style; Frank Lloyd Wright; and the foundation of American architectural modernism as exemplified by Neutra, Johnson, Saarinen, and Buckminster Fuller.

ART 4229 The Arts in Boston (3 q.h.)

An examination of the arts in Boston, such as painting, sculpture, and architecture. Lectures, discussions, tours, and field trips.

ART 4230 History of Photography (combines former History of Photography and History of Photography to the Twentieth Century) (3 q.h.)

A survey of developments in photography from the early daguerreotypes to the present. Major movements, styles, artists, and significant technological developments will be analyzed and discussed. Slide lectures and assigned readings.

ART 4231 Contemporary Photography (3 q.h.)

A study of styles and techniques that have evolved in contemporary photography since World War II. Emphasis will be placed on the variety of image-making techniques and photographic styles and concepts that emerged in the last twenty years. Slide lectures and assigned readings.

ART 4251 Advanced Graphic Design (formerly Advanced Commercial Design) (3 q.h.)

Creative problems in illustrative design.

ART 4255 Figure Drawing Workshop (3 q.h.)

Studio exploration of formal problems in anatomy and drawing the human form. Will include the study of understructure in figure drawing; gesture; figure composition; expressive use of line, value, and scale; and development of strong drawing technique. Emphasis will be placed on creating a personal drawing style.

ART 4311 New York Art Seminar (3 q.h.)

Study and observation of the painting collections in the Metropolitan Museum of Art, Frick Collection, Museum of Modern Art, and the Guggenheim Museum.

ART 4312 European Art Seminar (3 q.h.)

A four-week study and travel seminar through major European art centers, with emphasis on the major works of art in each.

ART 4364 Design and Production of Promotional Publications (3 q.h.)

Study of the design, function, and economics of producing promotional publications. Focus on the distinction between promotional and technical literature and their differences in objective and audience. Examines problems in product brochure design, marketing, advertising, sales support literature, and trade show and sales graphics.

ART 4365 Design and Production of Technical Publications (3 q.h.)

Study of the design, function, and economics of producing technical publications. Focus on the special requirements of technical literature, its objectives and intended audience. Examines problems in designing technical service manuals, operating guides, software documentation, and the appropriate use and function of schematics, block diagrams, line drawings, photographs, and other visuals.

ART 4800 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-level required course when the needed course is not available at the time recommended in the degree scheduling sequence. Petitions and procedural instructions are available in 204 Churchill Hall. Allow at least six weeks to complete petition process. *Prereq.* 87 q.h.

ART 4801 Directed Study 2 (3 q.h.)

An opportunity to initiate a second individual study as described above. *Prereq.* ART 4800.

ART 4810 Honors Program 1 (4 q.h.)

Independent work in a selected area under the direction of members of the department. *Prereq.* *Approval of the Dean.*

ART 4811 Honors Program 2 (4 q.h.)

Second opportunity to do independent work as described in ART 4810. *Prereq.* *ART 4810.*

ART 4812 Honors Program 3 (4 q.h.)

Additional opportunity to do independent work as described in ART 4810. *Prereq.* *ART 4811.*

ASL 4101 American Sign Language 1 (4 q.h.)

An introduction to American Sign Language, the language used by members of the deaf community in the United States and parts of Canada. Focuses on conversation in signs, basic rules of grammar, and aspects of the deaf community.

ASL 4102 American Sign Language 2 (4 q.h.)

Continuation of basic language and culture study, with opportunities to build receptive and expressive sign vocabulary; use of signing space, further use of non-manual components, including facial expressions and body postures; introduction to finger spelling. *Prereq.* *ASL 4101 or consent of instructor.*

ASL 4201 Intermediate American Sign Language 1 (4 q.h.)

Emphasizes further development of receptive and expressive skills, finger spelling, vocabulary building, grammatical structures. Encourages more creative use of expression, classifiers, body postures, and the signing space. Introduces sign variations (regional and ethnic), and political and educational institutions of the deaf community. *Prereq.* *ASL 4102 or consent of instructor.*

ASL 4202 Intermediate American Sign Language 2 (4 q.h.)

Intensive practice involving expressive and receptive skills in story telling and dialogue. Introduction to language forms found in ASL poetry and features of culture as they are displayed in art and theatre. *Prereq.* *ASL 4201 or consent of instructor.*

ASL 4401 American Sign Language Literature (4 q.h.)

Various genres of American Sign Language literature will be read and discussed in ASL. This course will concentrate on work of current recognized narrators in both literary and face-to-face story-telling traditions, and will also include selected autobiographical sketches, lectures, stories, and letters from the early 1900s by such historical figures as Clerc, Veditz, Hotchkiss, E.M. Gallaudet, and others. A videotaped research essay will be required at the end of the course. *Prereq.* *ASL 4202 or by examination.*

ASL 4402 American Deaf Culture (4 q.h.)

Focuses on the status of deaf people as both a linguistic and a cultural minority group. Designed for individuals

who may or may not have had prior experience with deaf people, the course raises questions concerning the nature of sign language and its varieties, educational and historical treatment of deafness, the sociological and cultural makeup of deaf individuals, and the nature of ASL literature and poetry.

ASL 4403 Deaf History (4 q.h.)

A survey of the history of deaf people in the western world with emphasis on the American deaf community, its language, education, and relation to hearing society. *Prereq.* *ASL 4101 or consent of instructor.*

ASL 4404 Linguistics of American Sign Language (4 q.h.)

Designed for skilled signers of ASL with no previous training in linguistics. Conducted in ASL, the course is descriptive and data-oriented rather than theoretical. Topics to be covered include the parts of a sign, how to build words in ASL, sentence structure (questions, statements, relative clauses, etc.), meaning and the issue of iconicity, how ASL organizes sentences according to old and new information, and the structure of stories in ASL. Grammatical features of ASL, such as classifiers, specifiers, verb modulations, and aspect, and the role of facial expression are also discussed.

ASL 4501 Sign Language Interpreting 1 (4 q.h.)

First of a three-course sequence involving the theoretical and practical aspects of simultaneous interpretation of English into sign language and vice versa. Through lectures, discussions, and role playing, students are introduced to ethics, definitions, client-interpreter relationships, linguistic considerations, mechanics, and special considerations for various interpreting situations. Each student must have access to a cassette recorder and one cassette. *Prereq.* *ASL 4202 or consent of instructor.*

ASL 4502 Sign Language Interpreting 2 (4 q.h.)

For students who have completed a basic course or who are currently working as interpreters. Lectures, discussions, and role playing cover topics that include ethics, role, fees, professional and legal issues, and the certification process. Laboratory work focuses on increasing skills in simultaneously interpreting English into sign language and vice versa. Each student must have access to a cassette recorder and one cassette. *Prereq.* *ASL 4501 or consent of instructor.*

ASL 4503 Sign Language Interpreting 3 (4 q.h.)

For students who have completed the equivalent of ASL 4501 and ASL 4502 and who wish to upgrade their skills. Laboratory work focuses on interpreting ASL into English and vice versa, and transliterating spoken English into manual English. Each student must have access to a cassette recorder and one cassette. *Prereq.* *ASL 4502 or consent of instructor.*

ASL 4504 Practicum in Sign Language Interpreting 1 (4 q.h.)

Sixty hours of sign language observation and interpreting under supervision of interpreters or staff in various

settings arranged with the instructor. Twenty-four hours of seminar will be held to discuss ethics, professional conduct, and other problems that arise in student assignments. This sequence is designed to assist the student in preparing for the National Registry of Interpreters for the Deaf Certification Evaluation. *Prereq.* ASL 4503 or equiv.

ASL 4505 Practicum in Sign Language Interpreting 2 (4 q.h.)

A continuation of ASL 4504. *Prereq.* ASL 4504.

ASL 4506 Practicum in Sign Language Interpreting 3 (4 q.h.)

A continuation of ASL 4505. *Prereq.* ASL 4505.

ASL 4507–ASL 4510 American Sign Language Interpreting Seminars (1 q.h.)

These are short-term training opportunities for currently practicing Sign Language Interpreters, scheduled once each quarter on two consecutive Saturdays. In a given academic year, the course numbers for these seminars are **ASL 4507, ASL 4508, ASL 4509, and ASL 4510**. Because the topics or skill areas addressed will change from year to year, *these courses may be repeated for credit*. Participants should be currently working as Sign Language interpreters. Enrollment will be limited. For more information, please call American Sign Language Programs, 617-437-3064 (voice) or 617-437-3067 (TTY).

BIO 4103 Biology 1 (General) (3 cl., 3 lab., 4 q.h.)

Universal properties and processes of living organisms, cellular composition and cellular activities, inheritance and cellular control. *The required laboratory for this course is designated BIO 4173, Lab for BIO 4103, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4103.* (Laboratory fee)

BIO 4104 Biology 2 (Animal) (3 cl., 3 lab., 4 q.h.)

Functional anatomy of animal organ systems, their interactions and environmental relationships. *The required laboratory for this course is designated BIO 4174, Lab for BIO 4104, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4104.* *Prereq.* BIO 4103 or equiv. (Laboratory fee)

BIO 4105 Biology 3 (Animal) (3 cl., 3 lab., 4 q.h.)

Systematic comparative study of the structure and functions of animals. Diversity of animals considered from the standpoint of evolutionary adaptation. *The required laboratory for this course is designated BIO 455, Lab for BIO 4105, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4105.* *Prereq.* BIO 4104 or equiv. (Laboratory fee)

BIO 4133 Plant Biology (3 cl., 3 lab., 4 q.h.)

Systematic study of the structure and function of plants, principally vascular plants; survey of the plant-like protists and monerans. *The required laboratory for this*

course is designated BIO 4183, Lab for BIO 4133, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4133. *Prereq.* BIO 4103 or equiv. (Laboratory fee)

BIO 4175 Human Anatomy and Physiology 1 (2 cl., 2 lab., 3 q.h.)

Introduction to human anatomy; osteology; anatomy of the muscular, respiratory, digestive, vascular, and urogenital systems. The laboratory generally includes a study of human bone and cat dissection. *The required laboratory for this course is designated BIO 4195, Lab for BIO 4175, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4175.* *Prereq.* BIO 4105 or equiv. (Laboratory fee)

BIO 4176 Human Anatomy and Physiology 2 (2 cl., 2 lab., 3 q.h.)

Principles of physiology and continuation of the study of human anatomy. The laboratory is mainly concerned with muscle physiology. *The required laboratory for this course is designated BIO 4196, Lab for BIO 4176, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4176.* *Prereq.* BIO 4175 or equiv. (Laboratory fee)

BIO 4177 Human Anatomy and Physiology 3 (2 cl., 2 lab., 3 q.h.)

Continuation of the principles of physiology. The anatomy and physiology of the nervous system, physiology of the endocrine system. The laboratory generally deals with the physiology of respiration and the physiology of blood. *The required laboratory for this course is designated BIO 4187, Lab for BIO 4177, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4177.* *Prereq.* BIO 4176 or equiv. (Laboratory fee)

BIO 4185 Man and His Biosphere 1 (3 cl., 3 q.h.)

An ecological analysis of the human situation and man's interaction with other organisms. The necessary foundation of biological principles will be presented.

BIO 4186 Man and His Biosphere 2 (3 cl., 3 q.h.)

A continuation of BIO 4185. *Prereq.* BIO 4185 or equiv.

BIO 4190 Microbiology 1 (2 cl., 3 lab., 3 q.h.)

Morphology and biochemistry of the bacteria. *The required laboratory for this course is designated BIO 4180, Lab for BIO 4190, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4190.* *Prereq.* BIO 4105 or equiv. (Laboratory fee)

BIO 4191 Microbiology 2 (2 cl., 3 lab., 3 q.h.)

Survey of pathogenic microorganisms. *The required laboratory for this course is designated BIO 4181, Lab for BIO 4191, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4191.* *Prereq.* BIO 4190 or equiv. (Laboratory fee)

BIO 4192 Microbiology 3 (2 cl., 3 lab., 3 q.h.)

Characteristics and role of microorganisms in the environment. *The required laboratory for this course is designated BIO 4182, Lab for BIO 4192, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4192. Prereq. BIO 4191 or equiv. (Laboratory fee)*

BIO 4224 Ecology 1 (3 cl., 3 q.h.)

Environmental factors; the soil system; water; the atmosphere; temperature, light, wind, pressure; the physico-chemical factors—CO₂, N, and mineral nutrients; habitat; distribution of plants and animals in the world according to temperature and precipitation. *Prereq. BIO 4105 or equiv.*

BIO 4225 Ecology 2 (3 cl., 3 q.h.)

The ecosystem; ecological niche; producers, consumers, and decomposers; the pond, desert, forest, and seashore ecosystems; energy cycle and efficiency of energy utilization; mass, weight, and energy pyramids. *Prereq. BIO 4224 or equiv.*

BIO 4226 Ecology 3 (3 cl., 3 q.h.)

Population ecology, biotic community, population growth, relations between the species, symbiosis, competition, predation, succession. *Prereq. BIO 4225 or equiv.*

BIO 4235 Genetics 1 (3 cl., 3 q.h.)

Mitosis, meiosis, and Mendelian genetics. *Prereq. BIO 4105, CHM 4113 or equiv.*

BIO 4236 Genetics 2 (3 cl., 3 q.h.)

Chromosome mapping, mutations, translocation, chromosomal aberrations. *Prereq. BIO 4235.*

BIO 4237 Genetics Laboratory (4 lab., 2 q.h.)

Laboratory exercises involving principles of Mendelian inheritance, linkage, crossing-over. Classical genetics utilizing *Drosophila*; biochemical studies utilizing *Neurospora*. *Each class session lasts longer than in BIO 4235 or BIO 4236. Prereq. BIO 4236 or equiv. (Laboratory fee)*

BIO 4246 Cell Biology 1 (3 cl., 3 q.h.)

Chemical composition of cells, structure of cells and organelles, transport processes, cell motion and excitability, growth. *Prereq. BIO 4105, BIO 4236, and CHM 4263 or equiv.*

BIO 4247 Cell Biology 2 (3 cl., 3 q.h.)

Cellular energy supply, enzyme function, respiration and metabolism, photosynthesis and other synthetic pathways, control of cellular process. *Prereq. BIO 4246 or equiv.*

BIO 4248 Cell Biology Laboratory (4 lab., 2 q.h.)

Laboratory techniques in cell biology, microscopy, structure and chemical composition of cells, enzyme measurements, photosynthesis, respiration, active transport, growth. *Each class session lasts longer than in BIO 4246 or BIO 4247. Prereq. BIO 4247 or equiv. (Laboratory fee)*

BIO 4258 Advanced Human Physiology (3 q.h.)

Study of human physiology emphasizing the cellular processes and underlying organ function and the interactions and control of organ systems. Selected physiological topics will be considered from these viewpoints as time allows. Reading to supplement material covered in lecture will be required. *Prereq. BIO 4177 and CHM 4113 or equiv.*

BIO 4259 Advanced Human Physiology 2 (3 q.h.)

Continuation of BIO 4258. *Prereq. BIO 4258.*

BIO 4295 Gross Anatomy and General Physiology 1 (3 cl., 3 q.h.)

Fundamental concepts of living organisms; chemical and biological characteristics of cellular metabolism; the skeletal system and its appendages; general nomenclature; anatomical names and terms.

BIO 4296 Gross Anatomy and General Physiology 2 (3 cl., 3 q.h.)

The systems of the body, the relations between them, the structure and function of each. *Prereq. BIO 4295 or equiv.*

BIO 4297 Gross Anatomy and General Physiology 3 (3 cl., 3 q.h.)

Continuation of BIO 4296. *Prereq. BIO 4296.*

BIO 4320 Medical Microbiology (2 cl., 4 lab., 4 q.h.)

Major characteristics of disease-producing organisms. *The required laboratory for this course is designated BIO 4330, Lab for BIO 4320, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4320. Prereq. BIO 4192 or professional laboratory experience in bacteriology. (Laboratory fee)*

BIO 4336 Horticulture (3 q.h.)

The study of the science and art of plants, stressing the use of plants in the home and community. *The required laboratory for this course is designated BIO 4366, Lab for BIO 4336, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4336. (Laboratory fee)*

BIO 4350 Histology-Organology 1 (1 cl., 2 lab., 2 q.h.)

The morphology of cells and tissues. *The required laboratory for this course is designated BIO 4360, Lab for BIO 4350, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4350. Prereq. BIO 4105 or equiv. (Laboratory fee)*

BIO 4351 Histology-Organology 2 (1 cl., 2 lab., 2 q.h.)

The tissue components of the integumentary, digestive, and respiratory systems. *The required laboratory for this course is designated BIO 4361, Lab for BIO 4351, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4351. Prereq. BIO 4350 or equiv. (Laboratory fee)*

BIO 4352 Histology-Organology 3 (1 cl., 2 lab., 2 q.h.)

The tissue components of the cardiovascular, excretory, reproductive, and endocrine systems. *The required laboratory for this course is designated BIO 4362, Lab for BIO 4352, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4352. Prereq. BIO 4351 or equiv. (Laboratory fee)*

BIO 4436 Advanced Horticulture (3 q.h.)

The advanced study of the art and science of using plants for home and community. Special emphasis will be accorded various philosophies involving plants and humans. *The required laboratory for this course is designated BIO 4461, Lab for BIO 4436, and generally meets on the same night. You must also register for this laboratory to receive credit for BIO 4436. Prereq. BIO 4336. (Laboratory fee)*

BIO 4461 Immunology (2 cl., 4 lab., 4 q.h.)

Biological, chemical, and physical attributes of antigens and antibodies, together with their serological interactions. *The required laboratory for this course is designated BIO 4462, Lab for BIO 4461, and generally meets on a different night. You must also register for this laboratory to receive credit for BIO 4461. Prereq. BIO 4192, CHM 4263 or equiv. (Laboratory fee)*

BIO 4801 Independent Study in Biology (4 q.h.)

This course enables students to focus on an area of special interest and relevance to their professional goals. The student will be paired with a faculty preceptor who will monitor and evaluate the completed project. Arrangements must be made with the Program Director prior to registering for the course. Please call 617-437-2819.

BL 4101 Law 1 (3 q.h.)

An introduction to the legal system. Topics include study of the nature, formation, and essential elements of contracts, including performance and remedies for breach. Course also examines agency law, including rights and duties of principal and agent, scope of authority, and relationships to third persons.

BL 4102 Law 2 (3 q.h.)

Course examines sales as governed by the Uniform Commercial Code, including the law of warranty, business organizations, partnerships, corporations, and other important business forms. *Prereq. BL 4101.*

BL 4103 Law 3 (3 q.h.)

Topics include commercial paper; a study of the function of negotiability; emphasis on bank checks and promissory notes; property; real property, personal property, and bailments; bankruptcy and secured transactions. *Prereq. BL 4102.*

BL 4105 Law (Intensive) (6 q.h.)

Introduction to the legal system. Contracts: nature, formation, and essential elements of contracts. Agency:

rights and duties of principal and agent, scope of authority, relationships to third persons. Sales: as governed by the Uniform Commercial Code, including law of warranty. Business organizations: partnerships, corporations, and other important business forms.

BL 4115 Law and Social Issues (3 q.h.)

A study of the structure and dynamics of the American legal system, approached through an analysis of selected cases dealing with social issues.

BL 4120 Law for Personal Planning (3 q.h.)

Legal aspects of personal and family planning, including: consumer rights, wills and estate planning, marital law, real estate purchase, tenants' rights, and other selected topics of interest.

CHM 4101 Modern Chemistry 1 (Introduction to Inorganic Chemistry) (2 cl., 2.4 lab, 3 q.h.)

Fundamental ideas of matter and energy, chemical bonding, chemical energy, water and solutions, colloids, ionic reactions, oxidation and reduction, acidity, radioactivity, air and water pollution. Topics will usually be discussed from the viewpoint of recent developments. The laboratory deals with experiments related to the lecture material. *The required laboratory for this course is designated CHM 4107, Lab for CHM 4101, and generally meets on the same night. You must also register for this laboratory to receive credit for CHM 4101. (Laboratory fee)*

CHM 4102 Modern Chemistry 2 (Introduction to Organic Chemistry) (2 cl., 2.4 lab, 3 q.h.)

Classes of organic compounds, including hydrocarbons, alcohols, ethers, aldehydes, ketones, carboxylic acids, esters, amines, amides, and carbohydrates, including their relation to modern biology. The laboratory deals with experiments related to the lecture material. *The required laboratory for this course is designated CHM 4108, Lab for CHM 4102, and generally meets on the same night. You must also register for this laboratory to receive credit for CHM 4102. Prereq. CHM 4101 or equiv. (Laboratory fee)*

CHM 4103 Modern Chemistry 3 (Introduction to the Chemistry of Living Bodies) (2 cl., 2.4 lab, 3 q.h.)

Includes fats, proteins, enzymes, chemistry of digestion, and the chemical reactions to body fluids. The laboratory deals with experiments related to the lecture material. *The required laboratory for this course is designated CHM 4109, Lab for CHM 4103, and generally meets on the same night. You must also register for this laboratory to receive credit for CHM 4103. Prereq. CHM 4102 or equiv. (Laboratory fee)*

CHM 4105 Chemistry and the Environment (3 cl., 3 q.h.)

This course is designed to acquaint non-science students with the chemical aspects of the environment. Topics discussed generally include: air and water pollution, nuclear fallout, radiation damage, the effects of pesticides, aerosols, food additives, etc., and their re-

lation to public health. The necessary foundation of chemical principles will be presented.

CHM 4110 Chemistry Workshop (3 cl., 0 q.h.)

A discussion and problem-solving session that will help reinforce and re-examine the material covered in CHM 4111, CHM 4112, and CHM 4113. Content is programmed according to needs of the students, and the classes are small and informal.

CHM 4111 General Chemistry 1 (2 cl., 2.4 lab, 3 q.h.)

Fundamental concepts: symbols, formulas, equations, atomic weights, and calculations based on equations. Gases, liquids, solutions, and ionization. The laboratory generally deals with experiments related to the lectures. *The required laboratory for this course is designated CHM 4117, Lab for CHM 4111. You must also register for this laboratory to receive credit for CHM 4111. Prereq. MTH 4112 or equiv. (or taken concurrently). (Laboratory fee)*

CHM 4112 General Chemistry 2 (2 cl., 2.4 lab, 3 q.h.)

Atomic structure, bonding, and molecular structure. Oxidation and reduction reactions, equilibrium and kinetics. The laboratory generally deals with experiments related to the lectures. *The required laboratory for this course is designated CHM 4118, Lab for CHM 4112. You must also register for this laboratory to receive credit for CHM 4112. Prereq. CHM 4111 or equiv. (Laboratory fee)*

CHM 4113 General Chemistry 3 (2 cl., 2.4 lab, 3 q.h.)

Thermochemistry and electrochemistry; acids, bases, and solubility product; nuclear chemistry; introductory organic chemistry and biochemistry. The laboratory usually deals with experiments related to the lectures. *The required laboratory for this course is designated CHM 4119, Lab for CHM 4113. You must also register for this laboratory to receive credit for CHM 4113. Prereq. CHM 4112 or equiv. (Laboratory fee)*

CHM 4221 Analytical Chemistry 1 (2 cl., 2.4 lab, 3 q.h.)

Analytical procedures and techniques. Principles and practice of gravimetric methods of analysis. Laboratory work usually involves procedures and techniques of gravimetric analysis. *The required laboratory for this course is designated CHM 4227, Lab for CHM 221. You must also register for this laboratory to receive credit for CHM 4221. Prereq. CHM 4113 or equiv. (Laboratory fee)*

CHM 4222 Analytical Chemistry 2 (2 cl., 2.4 lab, 3 q.h.)

Principles and practice of titrimetric methods of analysis. The laboratory work usually involves the procedures and techniques of volumetric analysis. *The required laboratory for this course is designated CHM 4228, Lab for CHM 4222. You must also register for this laboratory*

to receive credit for CHM 4222. Prereq. CHM 4221 or equiv. (Laboratory fee)

CHM 4223 Analytical Chemistry 3 (2 cl., 2.4 lab, 3 q.h.)

Theories of spectrophotometry, chromatography, and selected electroanalytical methods. The laboratory usually involves instruments and procedures for electro-metric and optical methods of chemical analysis. *The required laboratory for the course is designated CHM 4229, Lab for CHM 4223. You must also register for this laboratory to receive credit for CHM 4223. Prereq. CHM 4222 or equiv. (Laboratory fee)*

CHM 4224 Analytical Chemistry (Lectures and laboratory, 4 q.h., summer quarter only.)

Survey of principles and theories of volumetric, gravimetric, and instrumental analysis. Application made in the laboratory with analyses of unknown samples. *The required laboratory for this course is designated CHM 4226, Lab for CHM 4224. You must also register for this laboratory to receive credit for CHM 4224. Prereq. General Chemistry or equiv. (Laboratory fee)*

CHM 4261 Organic Chemistry 1 (2 cl., 4 lab and disc., 4 q.h.)

Nature of carbon in organic compounds. General principles of structure, nomenclature, preparation, uses, and reactions of aliphatic hydrocarbons: alkanes, alkenes, alkynes, dienes, cycloalkanes. Position and geometric isomerism. Introduction to free radical and ionic mechanisms of reactions. The laboratory generally deals with the preparation and properties of compounds discussed in lecture. *The required laboratory and discussion for this course is designated CHM 4267, Lab for CHM 4261. You must also register for this laboratory and discussion to receive credit for CHM 4261. Prereq. CHM 4113 or equiv. (Laboratory fee)*

CHM 4262 Organic Chemistry 2 (2 cl., 4 lab and disc., 4 q.h.)

Structure of benzene, electrophilic aromatic substitution reactions. General principles of structure, nomenclature, preparation, uses, and reactions of the various types of organic compounds, including: alcohols, alkyl and aryl halides, ethers and epoxides, and carboxylic acids. Optical isomerism and introductory chemical kinetics will be discussed. The laboratory generally deals with the preparation and properties of compounds discussed. *The required laboratory and discussion for this course is designated CHM 4268, Lab for CHM 4262. You must also register for this laboratory and discussion to receive credit for CHM 4262. Prereq. CHM 4261 or equiv. (Laboratory fee)*

CHM 4263 Organic Chemistry 3 (2 cl., 4 lab and disc., 4 q.h.)

Continuation of CHM 4262, with emphasis on the application of chemical conversions to synthetic problems. Functional derivatives of carboxylic acids, sulfonic acids and their derivatives, amines, diazonium compounds, phenols, aldehydes, and ketones. The

laboratory generally deals with the preparation and properties of compounds discussed. *The required laboratory and discussion for this course is designated CHM 4269, Lab for CHM 4263, and generally meets on a different night. You must also register for this laboratory and discussion to receive credit for CHM 4263. Prereq. CHM 4262 or equiv. (Laboratory fee)*

CHM 4321 Instrumental Analysis 1 (formerly Instrumental and Radiochemistry 1) (3 cl., 3 q.h.)

Basic theory and instruments used in electrochemical analysis. Course generally includes such topics as electrode and cell potentials, potentiometric titrations, direct potentiometry (pH meters and specific ion electrodes), coulometry, polarography, amperometry, electrogravimetry, and conductivity. *Prereq. CHM 4223 or equiv. (This course and CHM 4322 can serve as preparation for certain graduate courses.)*

CHM 4322 Instrumental Analysis 2 (formerly Instrumental and Radiochemistry 2) (3 cl., 3 q.h.)

Basic theory and instruments used in spectrochemical analysis. Course generally includes such topics as electromagnetic, spectrum, ultraviolet and visible spectrophotometry, infrared spectrophotometry, X-ray analysis, fluorescence and phosphorescence, emission spectrophotometry, absorption spectrophotometry, and chromatography. *Prereq. CHM 4321 or equiv. (This course and CHM 4321 can serve as preparation for certain graduate courses.)*

CHM 4323 Radiochemistry (formerly Instrumental and Radiochemistry 3) (3 cl., 3 q.h.)

Radioactivity and nuclear reactions, production and study of nuclear reactions, equations of radioactive decay, nuclear states and radioactive processes, interaction of radiation with matter, radiation detection and measurement, statistics of radioactivity measurements, techniques for the study of radionuclides, traces in chemical applications, and nuclear energy. *Prereq. CHM 4322 or equiv.*

CHM 4371 Biochemistry 1 (3 cl., 3 q.h.)

The first quarter of a three-quarter sequence. Introduction to the biochemistry of the cell, including the occurrence, chemistry, and metabolism of carbohydrates, lipids, proteins, and nucleic acids. *Prereq. CHM 4263 or equiv.*

CHM 4372 Biochemistry 2 (3 cl., 3 q.h.)

Continuation of CHM 4371. *Prereq. CHM 4371 or equiv.*

CHM 4373 Biochemistry 3 (3 cl., 3 q.h.)

Continuation of CHM 4372. *Prereq. CHM 4372 or equiv.*

CHM 4381 Physical Chemistry 1 (3 cl., 3 q.h.)

Thermodynamics, thermochemistry, First and Second Laws, entropy and free energy in spontaneous processes. *Prereq. CHM 4113 or equiv.*

CHM 4382 Physical Chemistry 2 (3 cl., 3 q.h.)

Chemical equilibria, acids and bases, electrochemistry,

colligative properties, phase diagrams, thermodynamics of multicomponent systems, kinetic molecular theory. *Prereq. CHM 4381 or equiv.*

CHM 4383 Physical Chemistry 3 (3 cl., 3 q.h.)

Kinetics, quantum chemistry, photochemistry. *Prereq. CHM 4382 or equiv.*

CHM 4454 Introduction to Polymer Chemistry (3 cl., 3 q.h.)

Natural, modified, and synthetic polymers; plastics, fibers, and rubbers; condensation polymerization; addition polymerization in bulk, solution, and emulsion; kinetics; molecular weight; physical properties; uses. *Prereq. CHM 4263 or equiv.*

CHM 4801 Independent Study in Chemistry (3 q.h.)

This course enables students in Chemical-Biological Technology to focus on areas of special interest and relevance to their professional goals. The student will be paired with a faculty preceptor who will monitor and evaluate the completed project. Arrangements must be made with the Program Director prior to developing the project or registering for the course. Please call 617-437-2819.

DRA 4101 Introduction to Theatre (3 q.h.)

This course is designed to increase the student's awareness and enjoyment of theatre. Attention will be given to conventional forms of drama and to the newest kinds of performance, and their sources in theatre history. The course will detail how theatre is made and the people who make it: actor, director, writer and designer. The nature of the audience will be discussed, as will the relationship between theatre and society. Field trips are planned to view specific theatre work in the Boston area.

DRA 4110 Theatre Management (3 q.h.)

Surveys business problems of financing, promoting, programming for educational, community, and professional theatre. Visits by practicing professionals; practical application through class projects, working on actual productions. (A good course for those interested in business careers/arts management.)

DRA 4130 Prizewinning Plays (3 q.h.)

What makes a play win the Pulitzer Prize, a Tony Award, the Nobel Prize? An examination of selected plays that have received one or more of these prizes, and of their productions, provides some answers.

DRA 4140 Workshop for the Actor 1 (3 q.h.)

Physical preparation: Basic stage movement and deportment; the control of the stage voice; the analysis and establishment of characterization through observation and awareness of the body; improvisations and short scenes.

DRA 4141 Workshop for the Actor 2 (3 q.h.)

Psychological preparation. The analysis and establishment of characterization through memory, emotion, imagination, and recall. Analysis of specific roles, the

creation of a character analysis book, improvisations, and short scenes. *Prereq.* DRA 4140 or permission of instructor.

DRA 4142 Workshop for the Actor 3 (3 q.h.)

Preparing and performing the role. The physical and psychological preparation of specific roles. Short classroom scenes; the presentation of a one-act play. *Prereq.* DRA 4141 or permission of instructor.

DRA 4150 Introductory Mime Workshop (3 q.h.)

In-depth introduction to mime: illusionary technique, silent acting, and creating material for mime-theatre.

DRA 4160 Drama Movement and Therapy (3 q.h.)

An exploration of teaching and rehabilitative methods, using the techniques of creative dramatics and dance/movement therapy. An emphasis will be placed on the exceptional child and on the physically and emotionally handicapped.

DRA 4170 Creative Dramatics for Teachers (3 q.h.)

Introduction to the methods and creative techniques of using dramatics for programs in schools, churches, and recreational facilities. Teachers can learn how to use improvisation for self-improvement for a variety of students; for example, children and older adults.

DRA 4200 The Comic Theatre (3 q.h.)

An examination of the writing and staging of works by Aristophanes, Moliere, Shaw, Neil Simon. The nature, functions, and techniques of comic writing and performance.

DRA 4210 The Shakespeare Experience (3 q.h.)

A seminar designed to give the student the opportunity to view and critique live productions and/or motion picture and television versions of plays by William Shakespeare.

DRA 4230 The Boston Theatre Scene (3 q.h.)

This is a learning experience that stays current with what's on stage in Boston during the period that the course is scheduled. Students have the opportunity to view and critique live performances presented in the area's major and "Off-Broadway" theatres. Cost of theatre tickets is not included in tuition.

DRA 4240 The Creative Cinema (3 q.h.)

A seminar designed to give the student an opportunity to view and critique films and the work of their directors, performers, and other creative personnel. Cost of cinema tickets not included in tuition.

DRA 4350 Advanced Mime Workshop (3 q.h.)

A production workshop. Focuses on creating solo and ensemble materials and refining illusionary techniques. Class culminates in a public performance of material created by the students. Previous training with *The Pocket Mime Theatre* or permission of the instructor. Taught by principal mime with the company. *Prereq.* DRA 4150 or permission of instructor.

ECN 4115 Economic Principles and Problems 1 (3 q.h.)

Development of macroeconomic analysis; review of national income concepts; national income determination, fluctuation, and growth; role of the banking system and the Federal Reserve System; government expenditures and taxation; international trade; balance of international payments.

ECN 4116 Economic Principles and Problems 2 (3 q.h.)

The role of a market pricing system, demand and supply and determining the allocation of resources to competing uses and why this system may not function adequately in certain areas. Application of economic principles to private and public problems in such areas as pollution, poverty, and racial discrimination. *Prereq.* ECN 4115 or equiv.

ECN 4117 Economic Principles and Problems 3 (3 q.h.)

Application of economic principles to selected problem areas: poverty, competition, labor, agriculture, urban. *Prereq.* ECN 4116 or equiv.

ECN 4118 Economics (Intensive) (9 q.h.)

Combination of ECN 4115, ECN 4116 and ECN 4117. (Not open to students who have taken ECN 4115, ECN 4116, ECN 4117.)

ECN 4130 Medical Economics (3 q.h.)

Examination and discussion of the following topics: health care trends in the United States; causes for increases in medical care costs; supply and training of health care personnel; the nation's need for physicians, nurses, pharmacists, and other allied health personnel; the quality of medical care; economics of health insurance plans; consumer demand for health care, medical facilities, professional and semi-professional personnel.

ECN 4140 Economics of Crime (3 q.h.)

Theoretical and empirical analysis of the economic causes of criminal behavior will be presented. The social costs of crime and its prevention will be covered, and techniques for designing optimum law enforcement policies will be developed.

ECN 4150 Economics of World Energy and Primary Resources (3 q.h.)

Investigates economic, political, and historical backgrounds of the energy and other resource problems. Future impact of primary resource limitations on U.S. and world economics will be analyzed. Feasibility studies of resource substitution.

ECN 4155 Superpower Economics (3 q.h.)

Analyzes the relative economic structure and strength of the U.S., U.S.S.R., Japan, the Common Market, and China, as well as the economic relations among these powers. Also may examine the impact of these relations on the domestic economies of the superpowers and of the developing nations of the world.

ECN 4215 Macroeconomic Theory (formerly Intermediate Economic Theory 2) (3 q.h.)

Investigation of the conceptual and empirical problems of creating and using national accounts; price index problems, conceptual and empirical evaluation of several consumption and investment functions, and their policy implications; multiplier and accelerator models; a brief history of recent cyclical fluctuations. Analysis of inflation and growth theories in the light of recent economic history. *Prereq.* ECN 4117 or *equiv.*

ECN 4216 Microeconomic Theory (formerly Intermediate Economic Theory 1) (3 q.h.)

A detailed study of supply and demand analysis, various elasticity concepts and applications, theory of consumer demand, theory of production, and derivation of cost curves. Detailed analysis of pricing and output behavior in the several market structures with their welfare implication; the pricing of resources. *Prereq.* ECN 4117 or *equiv.*

ECN 4250 Statistics 1 (3 q.h.)

Introduction to the collection and organization of data. Topics include the measurement, presentation, and uses of measures of central tendency and variability, elementary set theory, basic probability, and probability distributions.

ECN 4251 Statistics 2 (3 q.h.)

Topics include sampling and basic estimation techniques, "t" distribution, testing statistical hypotheses, and analysis of variances. *Prereq.* ECN 4250 or *equiv.*

ECN 4252 Statistics 3 (formerly Forecasting and Other Topics in Statistics) (3 q.h.)

This course focuses on the methods of econometric estimation and forecasting. Topics include linear regression analysis and correlation analysis. Other topics discussed include time series analysis and index numbers. *Prereq.* ECN 4251 or *equiv.*

ECN 4253 Statistics (Intensive) (9 q.h.)

A combination of ECN 4250, ECN 4251, and ECN 4252. (Not open to students who have taken ECN 4250, ECN 4251 and ECN 4252.)

ECN 4310 Labor Economics (3 q.h.)

Economic analysis of the labor market, including the labor force, the demand for labor, and the institutions and policies dealing with them. An examination of employment, unemployment, wage determination, and the development and efficient use of labor resources; collective bargaining issues and their economic consequences. *Prereq.* ECN 4117 or *equiv.*

ECN 4311 Human Resource Planning (formerly Manpower and Anti-Poverty Policies and Programs) (3 q.h.)

Assessment of government and private efforts to fight poverty and improve the labor market position of impoverished groups; relation between causes of poverty

and discrimination; and possible remedies. Manpower training programs, negative income tax, family allowances, and other income maintenance schemes.

ECN 4315 Income Inequality and Discrimination (formerly Poverty and Discrimination) (3 q.h.)

Analysis of trend and composition of poverty in America. Examination of labor market, demographic and institutional forces contributing to poverty; role of education; economics of race and sex discrimination; public welfare system and proposed reforms.

ECN 4321 Urban Economic Problems and Policies (3 q.h.)

Economic analysis of selected urban problems such as housing, poverty, transportation, education, health, crime, and the urban environment. Discussion of public policies relating to such problems.

ECN 4322 Economics of Transportation (3 q.h.)

Transportation and land-use patterns; externalities; social costs and social benefits of various modes of transportation; ownership, regulations, and financing of various modes of transportation; economies of new technology in transportation.

ECN 4323 Economics of the Quality of Urban Environment and Control (3 q.h.)

Economic analysis of air, water, thermal, and noise pollution; the utilization of urban space and other urban resources; identification of possible economic effects of urban environment, such as crime, delinquency, immobility, and congestion.

ECN 4330 Economic Growth and Development (formerly Economic Growth and Development 1) (3 q.h.)

Prospects for economic growth and development in poor nations as indicated by economic analysis and historical experience: social, cultural, and institutional determinants of growth; analysis of agriculture and development.

ECN 4331 American Economic History (3 q.h.)

Economic development of the United States, with emphasis upon the post-Civil War period and selected European developments.

ECN 4333 European Economic Development (formerly Economic Growth and Development 2) (3 q.h.)

Economic inheritance of the nineteenth-century development of capitalism and laissez-faire. The aftermath of the Industrial Revolution, European overseas expansion, the twentieth century, the world wars, the dissolution of empires, American economic conquest and European integration, the future of less developed areas in southern Europe. Environmental impact of industrialism and the implications of technological society.

ECN 4334 Comparative Economic Systems (3 q.h.)

Competing types of theoretical economic systems;

analysis of organization and operation of currently existing types of communist, socialist, and capitalist economies; comparison and evaluation of economic behavior and performance of different economic systems.

ECN 4335 International Economics 1 (3 q.h.)

Economics of international trade, tariffs, and resource use, and balance of payments mechanisms. *Prereq.* ECN 4117 or equiv.

ECN 4336 International Economics 2 (3 q.h.)

International commercial policy, financial organizations, and recent problems. *Prereq.* ECN 4335 or equiv.

ECN 4342 Money and Banking 1 (3 q.h.)

Introduction to money and credit, commercial banking structure, and money creation; problems and policy of central banking in the United States. *Prereq.* ECN 4117 or equiv.

ECN 4343 Money and Banking 2 (3 q.h.)

Theory of money and prices and monetary policy; interest theory, debt management, and international monetary problems and analysis. *Prereq.* ECN 4342 or equiv.

ECN 4344 Government Finance (formerly Public Finance) (3 q.h.)

Fiscal functions, institutions, and politics; growth of the public sector, expenditure planning in theory and practice; cost-benefit analysis; principles of taxation and tax incidence; major taxes at Federal and state-local levels; fiscal policy for high employment, price stability, and growth; current fiscal problems such as tax reform, urban fiscal problems, fiscal federalism, and income maintenance programs. *Prereq.* ECN 4117 or equiv.

ECN 4345 Business Cycles 1 (3 q.h.)

Intermediate macroeconomic theory. Theory of cyclical fluctuations in the context of multiplier and accelerator models. *Prereq.* ECN 4117 or equiv.

ECN 4346 Business Cycles 2 (3 q.h.)

Business cycle analysis, measurement, and public policy. *Prereq.* ECN 4345 or equiv.

ECN 4347 Business Cycles 3 (3 q.h.)

Business cycle forecasting methods and services. *Prereq.* ECN 4346 or equiv.

ECN 4348 Business Cycles (Intensive) (9 q.h.)

Combination of ECN 4345, ECN 4346, and ECN 4347. *Prereq.* ECN 4117 or equiv.

ECN 4350 Introduction to Econometrics (formerly Advanced Statistics 1) (3 q.h.)

The course focuses on the methods of econometric estimation and forecasting. Coverage includes topics in various statistical techniques. Students are given the opportunity to construct their own models and use computer facilities for estimation and forecasting. *Prereq.* ECN 4117 and ECN 4252.

ECN 4351 Problems in Economic Research

(formerly Advanced Statistics 2) (3 q.h.)

This course examines research methods of practicing economists with typical problems from applied areas of economics and choice of modeling framework; problems of data collection, review of estimation techniques and interpretation of results; development of static and dynamic adaptive policy models. *Prereq.* ECN 4117 and ECN 4252.

ECN 4353 Introduction to Mathematical Economics

(formerly Intermediate Economic Theory 3) (3 q.h.)

Introduction to mathematical analysis and comprehensive analysis of theory of distribution. *Prereq.* ECN 4117 or equiv.

ECN 4360 Managerial Economics (3 q.h.)

An application of the theory of demand, price, and output to the business firm and capital budgeting. *Prereq.* ECN 4117 or equiv.

ECN 4362 Industrial Organization and Public Policy (3 q.h.)

The theoretical framework for analysis and evaluation of the static and dynamic performance of real markets. An examination of the empirical studies testing the usefulness of applying theory to real markets. An examination of antitrust as a public policy designed to promote better market performance. *Prereq.* ECN 4117 or equiv.

ECN 4363 Government and Business 1 (3 q.h.)

Role of government in national economic affairs—theory and practice.

ECN 4364 Government and Business 2 (3 q.h.)

The relation between government and business; anti-trust laws. *Prereq.* ECN 4363 or equiv.

ECN 4365 Government and Business 3 (3 q.h.)

Application of anti-trust laws to business—emphasis on cases, principles, and current anti-trust problems. *Prereq.* ECN 4364 or equiv.

ECN 4490 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-level course in their major area on an individual basis. Petitions and procedural instructions are available from University College Social Science Programs, 204 Churchill Hall, 617-437-2416. *Prereq.* 87 q.h.

ECN 4491 Directed Study 2 (3 q.h.)

An opportunity to initiate a second individual study as described above. *Prereq.* ECN 4490.

ECN 4492 Economic Policy Seminar (3 q.h.)

Capstone course for senior majors with stress upon independent study and contemporary issues. *Prereq.* ECN 4117 or equiv.

ECN 4495 Honors Program 1 (4 q.h.)

Independent work in a selected area under the direction of members of the department. *Prereq.* Approval of the Dean.

ECN 4496 Honors Program 2 (4 q.h.)

Second opportunity to do independent work as described in ECN 4495. *Prereq.* ECN 4495.

ECN 4497 Honors Program 3 (4 q.h.)

Additional opportunity to do independent work as described in ECN 4495. *Prereq.* ECN 4496.

ENG 4005 English for International Students 1 (Noncredit)

An introduction to the grammar and rhetoric of English as a second language. Practice in listening, speaking, and writing, with selected readings and exercises for vocabulary and pronunciation.

ENG 4006 English for International Students 2 (Noncredit)

An intermediate course in English as a second language. Practice in preparing written and oral reports, including business and social letters. *Prereq.* ENG 4005 or *equiv.*

ENG 4007 Advanced English for International Students (3 q.h.)

An advanced course in English as a second language. Practice in special forms of writing to broaden diction, syntax, and organizational techniques. *Prereq.* ENG 4006 or *permission of instructor.*

ENG 4009 Fundamentals of English 1 (4 q.h.)

An intensive introduction to the principles of effective expository writing: emphasis on description, paragraph construction and organization; review of the conventions of English usage, punctuation, and syntax; essay assignments.

ENG 4010 Fundamentals of English 2 (4 q.h.)

Intensive instruction in exposition, argument, and academic essay writing; instruction in the writing of a research paper; continued emphasis on the conventions of English usage, punctuation, and syntax; essay assignments. *Prereq.* ENG 4009 or *equiv.*

ENG 4011 Elements of Writing (3 q.h.)

An intensive review of grammatical forms and structural patterns of current English. Practice in writing sentences, paragraphs, and short papers.

ENG 4110 English 1 (3 q.h.)

A detailed examination of the principles and methods of rhetoric, especially narration, description, and exposition, and frequent practice in writing paragraphs and themes in those modes.

ENG 4111 English 2 (3 q.h.)

Continued examination of the principles and methods of rhetoric, especially persuasion and argument; the study of short fiction; and the development of research skills. Practice in writing persuasive and critical themes and in preparing a research paper. *Prereq.* ENG 4110 or *equiv.*

ENG 4112 English 3 (3 q.h.)

A further refinement of writing and analytical skills through the study of drama and poetry. Practice in writing longer critical papers. *Prereq.* ENG 4111 or *equiv.*

ENG 4120 English Literature: To 1700 (formerly English Literature 1) (3 q.h.)

A survey of English literature from its beginnings to 1700, including works by Chaucer, Spenser, Shakespeare, Donne, and Milton.

ENG 4121 English Literature: Reason and Romanticism (formerly English Literature to 1832) (3 q.h.)

A survey of English literature from the neoclassical to the romantic age, including works by Pope, Swift, Johnson, Blake, Wordsworth, and Keats.

ENG 4122 English Literature: Victorians and Moderns (formerly English Literature 3) (3 q.h.)

A survey of English literature from the Victorian Age to the present, including works by Browning, Arnold, Hardy, Yeats, and Eliot.

ENG 4123 Early American Literature: Faith, Reason, and Nature (formerly American Literature 1) (3 q.h.)

A survey of American literature from the beginnings to the transcendentalists in the nineteenth century, including works by Bradstreet, Taylor, Edwards, Franklin, Emerson and Thoreau.

ENG 4124 American Romantics and American Realists (3 q.h.)

A survey of the fiction and poetry of nineteenth-century America, including the works of Hawthorne, Melville, Whitman, Dickinson, Twain, James, Crane and Dreiser.

ENG 4125 American Literature: The Modern Temper (formerly American Literature 3) (3 q.h.)

A survey of the prose and poetry of twentieth-century America, including the works of Eliot, Stevens, Fitzgerald, Hemingway, Wright and Plath.

ENG 4126 The Ancient and Medieval Worlds (3 q.h.)

Focuses upon the literature of the Bible and the principal writers of ancient Greece and Rome and medieval Europe, such as Homer, Sophocles, Ovid, Virgil, Dante and Boccaccio.

ENG 4127 From The Renaissance to Romanticism (3 q.h.)

Traces the literary achievement of the Renaissance, the Enlightenment, and the Romantic Age through a study of such writers as Rabelais, Cervantes, Racine, Voltaire, Goethe and Wordsworth.

ENG 4128 From Realism to Modernism (3 q.h.)

Examines the fiction and drama of the nineteenth century, and the chief literary influences of the twentieth

century, including such writers as Flaubert, Dostoyevsky, Ibsen, Chekhov, Baudelaire, Eliot, Woolf, Joyce, and Kafka.

ENG 4210 Science Fiction (3 q.h.)

The myths and rhetorical strategies of science fiction, including such novels as *Frankenstein*, *Childhood's End*, and *Stranger in a Strange Land*.

ENG 4211 Fantasy Literature (3 q.h.)

This course will investigate the development of fantasy literature in the nineteenth and twentieth centuries, focusing on the works of such authors as Lewis Carroll, Lord Dunsany, Kenneth Grahame, J.R.R. Tolkien, and Richard Adams.

ENG 4212 Horror Fiction (3 q.h.)

A study of horror literature and its concerns with the supernatural, the irrational, the nature of evil, and the landscape of dreams, including such novels as *Dracula*, *Dr. Jekyll and Mr. Hyde*, and *The Turn of the Screw*.

ENG 4213 Detective Fiction (3 q.h.)

Elements of intrigue, logic, and thought converge in this study of the who-done-it. Students sample a wide range of detective fiction to explore the questions of innocence and guilt, action and responsibility, power and authority, victim and victimizer, and to see connections between this popular form of literature and its classical antecedents.

ENG 4214 The Psychological Novel (3 q.h.)

A study of the mental and emotional processes affecting the form and style of such novels as *Crime and Punishment*, *Metamorphosis*, and *The Stranger*.

ENG 4220 Children's Literature (3 q.h.)

A study of the psychology of creation, the ways of the imagination, and the role of fantasy and play in such children's books as *Alice in Wonderland*, *The Wizard of Oz*, and *Charlotte's Web*.

ENG 4221 Images of Women in Literature (3 q.h.)

A descriptive and analytic study of the images of women and the archetypes underlying them in imaginative literature, including such writers as Homer, Austen, Ibsen, and Lawrence.

ENG 4222 American Women Writers (3 q.h.)

A study of representative nineteenth and twentieth century American women writers, including such poets as Dickinson and Plath, and such novelists as Chopin and Cather.

ENG 4223 British Women Writers (3 q.h.)

Examines important historical and thematic connections in the work of British women writers of the last 200 years, including the novels of Jane Austen, George Eliot, Virginia Woolf, and Doris Lessing.

ENG 4230 Modern Irish Literature (3 q.h.)

Irish literature in English from 1885 to the present, including such writers as Yeats, Joyce, O'Casey, and Behan.

ENG 4231 Irish Writers in America (3 q.h.)

A study of Irish themes and attitudes in the fiction and drama of twentieth-century America, including such writers as O'Neill, Donleavy, Alfred, and McHale.

ENG 4232 Ethnic Literature in America (3 q.h.)

Explores the range, variety, and themes of ethnic literature in America in the work of such writers as Nelson Algren, James I. Farrell, Philip Roth, and William S. Stryker.

ENG 4233 Outside the Mainstream: The Literature of America's Subcultures (3 q.h.)

A study of literature that reflects the specific interests, values, and concerns of America's diverse subcultural populations, including such works as *Black Elk Speaks*, *City of Night*, *Woman Warrior*, and the stories of Isaac Bashevis Singer.

ENG 4234 Modern American Voices: The New Essayists (3 q.h.)

Examines selected major nonfiction of the 1960s and 1970s, stressing the fresh styles and often disturbing cultural perspectives of such works as Norman Mailer's *The Armies of the Night*, Robert Persig's *Zen and the Art of Motorcycle Maintenance*, Annie Dillard's *Pilgrim at Tinker Creek*, and Richard Brautigan's *Trout Fishing in America*, as well as shorter works in the "new journalism" and personal essays by such writers as Joan Didion, Tom Wolfe, Susan Sontag, and Woody Allen.

ENG 4240 Fiction and the Movies (3 q.h.)

An introduction to the exciting relationship between verbal literature and contemporary cinema. The successes (and some failures) of efforts to transform famous novels and stories into worthy movies will be studied by comparing the original book to the film inspired by it. Elementary film theory and criticism will be taught and applied to such books-movies such as *Tom Jones*, *The Europeans*, *Sister Carrie*, *The Great Gatsby*, *Women in Love*, *The Big Sleep*, *The Treasure of Sierra Madre*, *The Night of the Hunter*, *Lolita*, *The Last Picture Show*, *Shane*, *One Flew Over the Cuckoo's Nest*, *East of Eden*, and *Looking for Mr. Goodbar*. (The number and choice of books-films may vary each quarter, depending upon instructor and rental availability.) (Lab fee)

ENG 4250 The Biography and Non-Fiction (3 q.h.)

Studies biography in an attempt to understand how individual behavior and achievement relate to social, cultural, political, and artistic values.

ENG 4349 Expository and Persuasive Writing 1 (formerly Expository Writing 1) (3 q.h.)

Designed to help students develop confidence and pro-

iciency in writing. Through first drafts to revisions, weekly writing assignments concentrate on mastering the skills of subject focus, clarity of expression, controlled development, and organization. Attention is paid to improving grammatical accuracy and sentence structure within the revision process. The concluding focus is on understanding expository writing as a reflection of logical thinking. *Prereq. ENG 4110 or equiv.*

ENG 4350 Expository and Persuasive Writing 2

(formerly Expository Writing 2) (3 q.h.)

Focus is on developing precise and persuasive writing patterns through experimentation with various rhetorical strategies. Using topics of current interest, students are expected to write extensively to gain fluency and to learn how to target their writing toward different audiences. Assignments provide practice in writing for persuasive effect, and in using different writing models to gain practical control of material. *Prereq. ENG 4349 or equiv.*

ENG 4352 Expository Communications (formerly Expository Writing 3) (3 q.h.)

A workshop in expository prose, emphasizing the practical problems of the writer on the job in advertising, public relations, or publishing. Practice in designing and writing special projects. *Prereq. ENG 4349 or equiv.*

ENG 4357 Creative Writing: Poetry (3 q.h.)

A course for beginning writers of poetry. Practice in writing poems in various forms and modes, discussion and criticism of student work and selected texts.

ENG 4358 Creative Writing: Fiction (3 q.h.)

A course for beginning writers of short fiction. Practice in writing short stories in various forms, discussion and criticism of student work and selected texts.

ENG 4359 Creative Writing Workshop (3 q.h.)

A course for practicing writers. Discussion and criticism of student manuscripts.

ENG 4362 Book Publishing (3 q.h.)

Helps provide students with a working knowledge of the book publishing industry and its editorial functions. Assists the aspiring writer's efforts to win acceptance by a publisher.

ENG 4380 Business Writing and Reports 1 (3 q.h.)

An introduction to the vocabulary and philosophy of business communications. Practice in the planning, writing, and analyzing of effective business letters and memoranda.

ENG 4381 Business Writing and Reports 2 (3 q.h.)

Methods and principles of research and documentation of semi-technical analyses and business reports. Practice in organizing and writing complex forms of business communications. *Prereq. ENG 4380 or equiv.*

ENG 4383 Business Writing and Reports (Intensive) (6 q.h.)

A combination of ENG 4380 and ENG 4381.

ENG 4500 The English Language (3 q.h.)

Development of modern English from pre-Anglo-Saxon beginnings; effects of Roman, Scandinavian, and Norman invasions; dialect geography; evolutionary change, word formation, and borrowing.

ENG 4501 Linguistics (3 q.h.)

Theories of the nature and origin of language; review of historical and comparative linguistics; prescriptive and descriptive grammars; structural and generative-transformational phonology, morphology, and syntax.

ENG 4502 Semantics (3 q.h.)

The relation between language and behavior, levels of abstraction in communication, habits of evaluation of linguistic phenomena, and the modification of such habits for human understanding and survival.

ENG 4602 Major Figures in Poetry (3 q.h.)

Examines closely the work of one poet from apprenticeship to maturity, in both form and theme, chosen from among major figures in England and America from Chaucer and Milton to Dickinson and Frost.

ENG 4603 Major Figures in Fiction (3 q.h.)

Examines closely the work of one writer of fiction from apprenticeship to maturity, in both form and theme, chosen from among major figures in England and America from Austen and Cooper to Joyce and Bellow.

ENG 4610 The American Short Story (3 q.h.)

The development of the American short story from its nineteenth-century origins to its present experiments, including such writers as Poe, Hawthorne, James, Hemingway, Roth, and Updike.

ENG 4611 The American Novel (3 q.h.)

Traces the development of the novel in America and the characteristic qualities that inform it. May include such writers as Cooper, Melville, James, Wharton, Faulkner and Ellison.

ENG 4612 Contemporary American Poetry (3 q.h.)

A study of the structure and themes of poetry in post-1945 America, including such writers as Ginsberg, Plath, Snodgrass, and Wilbur.

ENG 4637 Faith and Science: The Seventeenth Century (3 q.h.)

Examines in depth the prose and poetry of such major seventeenth-century English writers as Bacon and Locke, Donne and Marvell, Bunyan and Milton.

ENG 4638 Order and Disorder: The Eighteenth Century (3 q.h.)

Examines in depth the prose and poetry of such major eighteenth-century English writers as Pope and Swift,

Johnson and Boswell, and documents the rise of sentimentality and sensibility.

ENG 4639 Romantics and Victorians: The Nineteenth Century (3 q.h.)

Examines in depth the prose and poetry of such major nineteenth-century English writers as Wordsworth and Keats, Carlyle and Ruskin, Tennyson and Browning.

ENG 4640 The Twentieth Century (3 q.h.)

Examines in depth the prose and poetry of such major English writers as Yeats, Eliot, Joyce, Lawrence, Auden, and Thomas.

ENG 4641 Contemporary English Poetry (3 q.h.)

A study of the structure and themes of poetry in post-1945 England, including the work of Gunn, Hughes, Larkin, and Leverton.

ENG 4642 The English Novel (3 q.h.)

Traces the development of the English novel from its robust beginnings in the eighteenth century through its concern with manners and morals in the nineteenth century and the experiments of the twentieth century. May include such writers as Defoe, Fielding, Dickens, Eliot, Joyce and Lawrence.

ENG 4649 European and English Short Story (3 q.h.)

The development of the short story in both Europe and England, in the nineteenth and twentieth centuries. Such writers as Chekhov, Tolstoy, de Maupassant, Balzac, Mann, Camus, Kipling, Lawrence, Greene, and Böll will be examined in terms of their themes, forms, and techniques.

ENG 4650 Modern Bestsellers (formerly The Contemporary Novel) (3 q.h.)

Explores the fascinating world of modern bestsellers, a world of romance and adventure, of high living and sinister intrigue by such popular writers as Rona Jaffe, Harold Robbins, Jacqueline Susann, and Irving Wallace.

ENG 4651 The Continental Novel (3 q.h.)

Traces the development of the European novel through its various forms and themes from the early masters to the later ones, from Balzac and Tolstoy to Proust and Mann.

ENG 4658 Shakespeare the Dramatist (3 q.h.)

Examines in detail and at length the dramatic work of Shakespeare in an attempt to define and illustrate the formal strategies and important themes of such representative plays as *Merchant of Venice*, *I Henry IV*, *As You Like It*, and *Hamlet*.

ENG 4659 Shakespeare: The Major Tragedies and Comedies (3 q.h.)

Focuses upon the productions of Shakespeare's mature dramatic art, for example, *King Lear*, *Twelfth Night*, *Antony and Cleopatra*, and *The Tempest*.

ENG 4800 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-level required course when the needed course is not available at the time recommended for a specific degree. Petitions and procedural instructions are available in 204 Churchill Hall. Allow at least six weeks to complete petition process. *Prereq.* 87 q.h.

ENG 4801 Directed Study 2 (3 q.h.)

An opportunity to initiate a second individual study as described above. *Prereq.* ENG 4800.

ENG 4802 Honors Program 1 (4 q.h.)

Independent work in a selected area under the direction of members of the department. *Prereq.* Approval of the Dean.

ENG 4803 Honors Program 2 (4 q.h.)

Second opportunity to do independent work as described in ENG 4802. *Prereq.* ENG 4802.

ENG 4804 Honors Program 3 (4 q.h.)

Additional opportunity to do independent work as described in ENG 4802. *Prereq.* ENG 4803.

ESC 4100 Earth Sciences 1 (3 q.h.)

The fundamental components of the solid Earth and their modes of organization; the structure of the solid Earth; its mode of forming its crustal exterior; the role of the oceans in building and shaping the continental masses.

ESC 4101 Earth Sciences 2 (3 q.h.)

The gaseous components of the fluid Earth and their organization into masses, systems, and mass interaction. The long-range consequences of the fluid Earth's effects upon the solid Earth in the reshaping of landforms and the production of new land masses. *Prereq.* ESC 4100 recommended.

ESC 4102 Earth Sciences 3 (3 q.h.)

Study of the Earth as an object in space; the history of the Earth as identified in the solid materials of the Earth; the implications of the Earth's history for the other members of the solar system; the solar system as a model for the universe. *Prereq.* ESC 4101 recommended.

ESC 4109 Earth Sciences (Intensive) (9 q.h.)

Combination of ESC 4100, ESC 4101, and ESC 4102, as a one quarter course, (Not open to students who have taken ESC 4100, ESC 4101 and ESC 4102.)

ESC 4159 Observational Astronomy (3 q.h.)

Introduction to the planets, stars, and constellations which are visible to the naked eye. Lectures, the planetarium, and actual viewing sessions are all used during the course. Primary emphasis will be placed on those stars and constellations easily seen from mid-northern latitudes.

ESC 4200 Principles of Geology 1 (3 q.h.)

Detailed analysis of the crustal components of the Earth,

their modes of formation, and the forces involved in their shaping; the relation of these factors to the structure and processes of the Earth's interior.

ESC 4201 Principles of Geology 2 (3 q.h.)

The forces and processes involved in the alteration, transportation, and deposition of crustal materials; their effects on the Earth's landforms. The interactions of the oceans with the land masses. (Not open to students who have credit for an equivalent course.) *Prereq.* ESC 4200.

ESC 4202 Principles of Geology 3 (3 q.h.)

Detailed study of the sedimentary and radiochemical deposits of the Earth and their relevant contributions to understanding the history of the Earth. *Prereq.* ESC 4201.

ESC 4215 Principles of Oceanology 1 (3 q.h.)

In-depth study of the origin of the global ocean; the physical and chemical properties of sea water; development of ocean currents and their effects on land masses of the world; problems of ocean pollution. *Prereq.* ESC 4101.

ESC 4216 Principles of Oceanology 2 (3 q.h.)

The habitat zones and organisms of the sea; economic importance of marine resources for expanding world population. *Prereq.* ESC 4215.

ESC 4217 Principles of Oceanology 3 (3 q.h.)

Physiography and structure of ocean basins; marine geological processes and features; sedimentation, erosion, shorelines, and the bottom topography; methods and techniques of marine geological explorations. *Prereq.* ESC 4216.

ESC 4230 Principles of Meteorology 1 (3 q.h.)

In-depth study of the composition and structure of the atmosphere, the issue of the solar energy input, and the physical consequences for the dynamics of the atmosphere. *Prereq.* ESC 4101.

ESC 4231 Principles of Meteorology 2 (3 q.h.)

The formation and behavior of air masses, interactions of air masses, the formation of fronts and storms. *Prereq.* ESC 4230.

ESC 4232 Principles of Meteorology 3 (3 q.h.)

The practices and procedures of weather reporting and forecasting, the formulation of weather maps, the historical weather record and its value for the studies of world climatology. *Prereq.* ESC 4231.

ESC 4245 Principles of Astronomy 1 (3 q.h.)

The nature and scope of astronomy, the geocentric universe, the heliocentric universe, celestial reference systems, time and the calendar, the sun-moon-earth system, astronomical instruments. *Prereq.* ESC 4102.

ESC 4246 Principles of Astronomy 2 (3 q.h.)

The solar system, the inner planets, the outer minor planets, the outer major planets, the telescopic planets,

the asteroid belt, meteors, comets, the sun as a source of energy and center of organization. *Prereq.* ESC 4245.

ESC 4247 Principles of Astronomy 3 (3 q.h.)

The triangulation of space, stellar population, star color and motion, star systems, stellar evolution, galaxies. *Prereq.* ESC 4246.

ESC 4275 Principles of Conservation 1 (3 q.h.)

Philosophy of conservation, historical development of the conservation movement in the U.S. since 1900, interactions of economics and conservation practices. *Prereq.* ESC 4102.

ESC 4276 Principles of Conservation 2 (3 q.h.)

Problems relating to the supply, use, and management of major renewable natural resources: forests, soil, wildlife, and water. *Prereq.* ESC 4275.

ESC 4277 Principles of Conservation 3 (3 q.h.)

Application of the theories and techniques of conservation, problems of urban resources, air and water pollution, recreational resources, the availability of funds. *Prereq.* ESC 4276.

ESC 4301 Descriptive Mineralogy (3 q.h.)

The significance of atomic structure to the crystalline forms of mineral materials; the forces and factors that are responsible for the formations of minerals in the rock materials of the Earth's crust. *Prereq.* ESC 4202.

ESC 4302 Igneous and Metamorphic Petrology (3 q.h.)

The details of volcanic factors that produce igneous rock types; the internal and external crustal forces and motions that re-form all previously existing rock types. *Prereq.* ESC 4301.

ESC 4303 Sedimentary Petrology (3 q.h.)

The processes and forces that provide the materials for sedimentary rock forms; the rock types that evolve with time and their stratigraphic significance. *Prereq.* ESC 4302.

ESC 4330 Fisheries Oceanology 1 (3 q.h.)

Survey of commercially important marine organisms; life and distribution of commercially important seaweed, shellfish, and fishes; population dynamics and fishery potential of the world's oceans; analysis of fishery stocks and sea farming. *Prereq.* ESC 4217.

ESC 4331 Fisheries Oceanology 2 (3 q.h.)

Examination of fishery methods and techniques around the world; recent technological advancement; commercial products and applications of marine organisms; special emphasis on marine products of commerce from the New England area; chemical, industrial, and dietary applications of marine products. *Prereq.* ESC 4330.

ESC 4332 Marine Resources (3 q.h.)

Quantitative and qualitative consideration of energy

from the marine environment; current technological developments in the use of tidal power, off-shore oil, natural gas, thermal and nuclear energy from the sea. Food resources of the sea; analysis of world marine food production; marine food technology, conservation, and mariculture. Coastal zone recreational resources: beaches, artificial fishing reefs; shore erosion; scuba, boating, sailing, angling, and surfing. *Prereq.* ESC 4331.

ESC 4390 Solar System Astronomy (3 q.h.)

Detailed examination of the individual components of the solar system. Contemporary results from the space probes are used to reassess our understanding of the origin and development of the solar system. *Prereq.* ESC 4247.

ESC 4391 Celestial Astronomy 1 (3 q.h.)

Examination of the sun as a model star; variations of characteristics in single stars, star systems, stellar populations; the H-R diagram and stellar evolution; the significance of radio astronomy for stellar structure and stellar evolution. *Prereq.* ESC 4390.

ESC 4392 Celestial Astronomy 2 (3 q.h.)

The structure and organization of the Milky Way galaxy; the nature of interstellar and intergalactic space, quasars, pulsars, black holes; cosmology. *Prereq.* ESC 4391.

ESC 4420 Conservation and the Nation (3 q.h.)

In-depth study of the current practices and problems in our nation, mineral resources availability and allocation, energy resources, atmospheric and fresh and salt water pollution, wildlife and endangered species. *Prereq.* ESC 4277.

ESC 4421 Conservation and the Community (3 q.h.)

Examination of the conservation problem at the local level, identification of the problem, the factors involved, the dimension of the problem, the responsibility of the community. *Prereq.* ESC 4420.

ESC 4422 Conservation Management (3 q.h.)

Assessment of current practices of the local community, sources of knowledge and assistance among the populace, agencies available to the community, nature and scope of practices needed, practicality of community action. *Prereq.* ESC 4421.

ESC 4650 History of Ancient World Sciences and Technologies (3 q.h.)

In-depth study of selected sciences and technologies characterizing the ancient world. Classes are a combination of lecture-discussion, seminars based upon independent research, and extensive outside reading.

ESC 4651 History of Modern World Sciences and Technologies (3 q.h.)

Continuation of ESC 4650, beginning with the period of the Western-world Renaissance. Continues to the present with the implications of contemporary sciences and technologies for the immediate future.

ESC 4801 Independent Study in Earth Science (3 q.h.)

Enables students to focus on areas of special interest and relevance to their professional goals. The student will be paired with a faculty preceptor who will monitor and evaluate the completed project. Arrangements must be made with the Program Director prior to registering for the course. Please call 617-437-2819.

FI 4101 Personal Finance (Recommended for non-finance majors.) (3 q.h.)

A practical approach to problems of managing personal finances. Topics include financial planning, budgeting, obtaining credit and loans, income taxes, savings and investments, life insurance, home buying, and estate planning. Subjects are treated on a non-technical basis.

FI 4105 Consumer Finance (3 q.h.) (Recommended for non-finance majors and non-business students.)

Extension of personal finance into the specific area of consumer finance. The course will give the student the opportunity to examine consumer installment sales law, consumer protection statutes, financing practices of banks and other financing institutions. Activities of the consumer affairs offices of the Attorney General's and Banking Commissioner's departments and their influence on consumer finance will be analyzed. Attention will be focused on a practical interpretation of laws and practices dealing with contracts.

FI 4301 Principles of Finance (formerly Introduction to Financial Management) (3 q.h.)

Survey of the scope and nature of finance. Introduces basic finance concepts and principles. Topics include financial analysis, financial planning, working capital management, the time value of money, and an introduction to financial markets and different types of securities. *Prereq.* ACC 4102 and ECN 4416.

FI 4302 Financial Management 1 (3 q.h.)

Introduction to financial management using the case method approach with both a domestic and international perspective. Topics include valuation, leverage, financial analysis and planning, working capital management, capital budgeting, cost of capital, and long-term and short-term financing decisions. *Prereq.* FI 4301.

FI 4303 Financial Management 2 (3 q.h.)

Introduction to financial management using the case method with both a domestic and international perspective. Topics include advanced capital budgeting, capital structure, decisions, dividend policy, leasing, convertibles and warrants, mergers, failures and reorganization, and the timing of financial policy. *Prereq.* FI 4302.

FI 4304 Financial Management (Intensive) (6 q.h.)

A one-quarter course covering the same material found in FI 4302 and FI 4303. (Not open to students who have taken FI 4302 and FI 4303.) *Prereq.* FI 4301.

FI 4305 Advanced Financial Management (3 q.h.)

Wider and more intensive investigation into the problems of financial management, with emphasis on decision-making. Specific topics include inflation, competition for investment funds, financial control and problems of the divisionalized company, and the inter-related problems of creating and maintaining a capital structure. *Prereq. FI 4303.*

FI 4310 Investment Principles (formerly Investments 1) (3 q.h.)

Overview of concepts, practices, and procedures of investments. Reviews various types of investments, including the role of security markets and security analysis. *Prereq. FI 4301.*

FI 4311 Investment Management (formerly Investments 2) (3 q.h.)

Examines the relation between the economy and stock prices. Covers corporate analysis, earnings, dividends, and cash flow. Introduces portfolio analysis. Studies technical analysis vs. fundamental factors. *Prereq. FI 4310.*

FI 4312 Investments (Intensive) (6 q.h.)

A one-quarter course covering the same material found in FI 4310 and FI 4311. (Not open to students who have taken FI 4310 and FI 4311.) *Prereq. FI 4303.*

FI 4313 Seminar in Investments (3 q.h.)

Intensive analysis of current problems in investments. Student research and presentation of individual papers are major components of the course. *Prereq. FI 4311.*

FI 4314 Advanced Investment Management (3 q.h.)

Theories and practice of portfolio selection and management are explored. Course uses special cases and studies their resolution. Other topics include fund management and legal liability. *Prereq. FI 4311.*

FI 4320 Credit Principles (formerly Credit Management 1) (3 q.h.)

Introduction to credit and its functions. Examines the role of the credit executive, credit investigation, documentary credit, trade credit, and organization of the credit department. *Prereq. FI 4301.*

FI 4321 Credit Management (formerly Credit Management 2) (3 q.h.)

Examines various forms of credit and collection services including analysis of financial statements, determination of credit-worthiness, creditors' rights, adjustment bureau operations, credit insurance, and guarantees. *Prereq. FI 4320.*

FI 4325 Budgeting and Planning (formerly Profit Planning and Control 1) (3 q.h.)

Intensive treatment of managerial planning, budgetary control, and financial analysis. Studies interrelation between functional areas in an organization using consolidated profit planning as an integrating device. Covers

fundamental financial analysis, comprehensive profit planning, general expense planning, production planning, materials planning, and purchasing. *Prereq. FI 4301.*

FI 4326 Financial Control (formerly Profit Planning and Control 2) (3 q.h.)

Development and application of variable budgets, planning and controlling capital expenditures, computer applications in profit planning, cash flow planning and control, cost-profit-volume analysis, performance reporting, and analysis of budget variations. *Prereq. FI 4325.*

FI 4330 Management of Financial Institutions 1 (3 q.h.)

Detailed examination of the role, diversity, and operation of the various financial institutions in our economy, including banking and related units; operating objectives, techniques, and services. *Prereq. FI 4301.*

FI 4331 Management of Financial Institutions 2 (3 q.h.)

Investment objectives and asset management. Examines liquidity, adequacy of capital, portfolio management and selection, including control and community relations. *Prereq. FI 4330.*

FI 4350 International Finance 1 (3 q.h.)

Introduction to international financial management in the multinational corporation. Analysis of basic problems and finance considerations involved with international investments, trade, and payments. Planning in the international environment related to exchange rates, currency revaluations, inflation, and local government policies. *Prereq. FI 4303.*

FI 4351 International Finance 2 (3 q.h.)

Analysis of the financial strategy involved with international investment alternatives, sources of capital, working capital management, fund flows, and management control through accounting and financial reporting. *Prereq. FI 4350.*

FI 4360 Commodities and Futures Markets (3 q.h.)

Investigation and study of commodities and futures markets, their objectives and operations, including hedging and speculation. Examines the role of banks and produce institutions in these markets and how they utilize various techniques in order to protect prices and positions. *Prereq. FI 4311 or permission of instructor.*

FI 4362 Seminar in Finance (3 q.h.)

An intensive analysis of current problems in finance. Student research and presentation of individual papers are major components of the course. *Prereq. FI 4303.*

FI 4380 Personal Financial Management 1 (3 q.h.)

Development of the professional personal financial manager. Analysis of needs and objectives, personalities, limits, and constraints. Techniques for need fulfillment and cash management. *Prereq. FI 4301.*

FI 4381 Personal Financial Management 2 (3 q.h.)

Individual aspects of personal financial plans. Impact of taxes and tax planning. Insurance, trust arrangements, estate planning. *Prereq. FI 4380.*

FI 4382 Personal Financial Management (Intensive) (6 q.h.)

A one-quarter course covering the same material found in FI 4380 and FI 4381. (Not open to students who have taken FI 4380 and FI 4381). *Prereq. FI 4301.*

HMG 4100 Hospital Organization and Management 1 (3 q.h.)

An examination of hospital organizational structure and administration. Focuses on the complex nature of hospital administration, the interdependent relationships, and organizational strategy. The case method is used to explore these issues. *Prereq. MGT 4101.*

HMG 4101 Hospital Organization and Management 2 (3 q.h.)

Continuation of HMG 4100, with emphasis on organizational issues and policy problems of the health care institution. *Prereq. HMG 4100.*

HMG 4200 Health Science Statistics (3 q.h.)

Designed to give the health practitioner the opportunity to learn the application of basic statistical techniques to be utilized in gathering, displaying, and interpreting health data. The principles of research design are considered. Agencies involved in collecting statistical data will be reviewed. *Prereq. MTH 4111.*

HMG 4210 Medical Care and Current Social Problems 1 (3 q.h.)

Seminar course discussing society's organization to deliver medical care services.

HMG 4211 Medical Care and Current Social Problems 2 (3 q.h.)

A continuation of HMG 4210, discussing topics identified in the first part of the course as matters of great concern in the field of medical care. *Prereq. HMG 4210.*

HMG 4215 Hospital Law and Ethics (3 q.h.)

A study of important legal principles and rulings of importance to medical administrative personnel and others. Brief introduction to interpersonal ethics in patient care.

HMG 4300 Home Health Care (3 q.h.)

Designed to cover all aspects of providing effective community home health care and the impact of these programs on the health care delivery system.

HMG 4301 Health Care Delivery Systems (3 q.h.)

A survey course that reviews the structure and function in organization of health care services.

HMG 4310 Principles and Practices of Community Health 1 (3 q.h.)

An overview of specialized health care facilities and their impact on health care delivery, including special

focus on ambulatory care, neighborhood health centers, HMOs, and other developing modalities.

HMG 4311 Principles and Practices of Community Health 2 (3 q.h.)

Continuation of HMG 4310, with emphasis on innovative approaches to meeting and responding to community health needs. *Prereq. HMG 4310.*

HMG 4400 Health Care Financial Management 1 (3 q.h.)

Introduction to health care financial management including issues in fund accounting, control and reimbursement. *Prereq. FI 4101.*

HMG 4401 Health Care Financial Management 2 (3 q.h.)

Continuation of HMG 4400. *Prereq. HMG 4400.*

HMG 4425 Applied Health Care Management 1 (3 q.h.)

Practical application of management principles in health care agencies. Students will examine potential problem areas in health care management settings in order to plan strategies to develop, implement, and evaluate job tasks for an efficient work environment. *Prereq. HMG 4101.*

HMG 4426 Applied Health Care Management 2 (3 q.h.)

Continuation of HMG 4425. *Prereq. HMG 4425.*

HMG 4430 Communications for Health Care Personnel 1 (3 q.h.)

A two-part course blending the demands of careful interviewing techniques, thorough record keeping, and accurate and articulate health correspondence. Emphasis placed on effective interaction between patients and health personnel, and between health workers and staff members of health agencies. Deals with the means of effecting good communicative skills with community resources for the benefit of patients.

HMG 4431 Communications for Health Care Personnel 2 (3 q.h.)

Continuation of HMG 4430. *Prereq. HMG 4430 or permission of instructor.*

HMG 4550 Contemporary and Controversial Health Care Issues 1 (3 q.h.)

A survey of contemporary and controversial health care issues. The course will examine the complex psychosocial, cultural, economic, and medical considerations related to our health care system.

HMG 4551 Contemporary and Controversial Health Care Issues 2 (3 q.h.)

Continuation of HMG 4550. *Prereq. HMG 4550.*

HMG 4600 Long-Term Care Administration 1 (6 q.h.)

The organization of care for the long-term and chronically ill patient. Goals and purposes of types of long-term care facilities. Design of long-term care facilities;

budgeting, financing, capital funding; administration. *Prereq.* HMG 4101.

HMG 4601 Long-Term Care Administration 2 (6 q.h.)

Internal and external systems pertinent to the long-term care facility. Examination of the components of the internal system, including the nursing unit, role of the physician, therapies, etc. Examination of the components of the external system, including licensing agencies, hospitals, and the community. Methods for improvement of services will be discussed. *Prereq.* HMG 4600 or equiv. or special permission of Director of Health Professions Programs.

HMG 4602 Long-Term Care Administration 3 (6 q.h.)

The nature and problems of aging, individual and social considerations. The care of the elderly in the home, community, and institutions. Overview of long-term care institutions and their impact on the health care industry. General survey and summary of the Massachusetts Nursing Home Administrators Licensure Examination. *Prereq.* HMG 4601 or equiv. or special permission of Director of Health Professions Programs.

HMG 4610 Principles and Practices of Community Mental Health (3 q.h.)

An introduction to the basic principles and techniques of modern mental health practice. *Prereq.* HMG 4311.

HRA 4302 Medical Terminology Survey (3 q.h.)

An introductory survey to medical terminology. (Not open to medical record students.) *Prereq.* Courses in Anatomy and Physiology.

HRA 4305 Medical Terminology 1 (2 q.h.)

An intensive introduction to medical terminology, including stems, prefixes, and suffixes. Practice in usage. *Prereq.* Courses in Anatomy and Physiology.

HRA 4306 Medical Terminology 2 (2 q.h.)

A more extensive and in-depth consideration of medical terminology. Intended for the medical record specialist. *Prereq.* HRA 4305.

HRA 4308 Hospital Management for Medical Record Administrators (3 q.h.)

An introduction to the basic management principles designed so that the health care facility will be the major source of example and case study (for Medical Record students only.)

HRA 4310 Medical Record Science 1 (6 q.h.)

Introduction to medical records, history of the medical record, and medical record forms. A study of the professional medical record administrator and his/her relationship to the health facility. A study of the numbering, filing, and security of medical records. Quantitative analysis of the record is stressed; didactic and laboratory experiences incorporated. *Prereq.* 80 q.h. including BIO 4177 and HRA 4306.

HRA 4311 Medical Record Science 2 (6 q.h.)

Principles of law as related to patient care and medical records. Rules of privileged communication and the release of information to agencies are stressed. Medical staff and committees are covered. Accreditation regulations are considered; didactic and laboratory experiences incorporated. *Prereq.* HRA 4310.

HRA 4312 Medical Record Science 3 (6 q.h.)

Study of the basic principles for compiling statistics for hospital and health facilities. Preparation of reports and vital statistic reporting are taught. Classification theory and the principles of disease coding are covered. Special indices are reviewed; didactic and laboratory experiences incorporated. *Prereq.* HRA 4311.

HRA 4313 Medical Record Science 4 (6 q.h.)

A study of health care legislation, quality assurance, utilization review, PSROs, planning agencies and their impact on record management; an introduction to specialized record systems; didactic and laboratory experiences incorporated. *Prereq.* HRA 4312.

HRA 4314 Medical Record Science 5 (6 q.h.)

Specialized record systems continued. Topics include ambulatory care, home care, and long-term care. These topics are approached in terms of information management and quality assurance. Discussion of new problems presented by changing patterns in health care delivery. Review of current literature. *Prereq.* HRA 4313.

HRA 4320 Organization of the Medical Record Department 1 (3 q.h.)

The study of the hospital, patterns of organization, lines of responsibility and authority, medical staff and administrative organization, departmental functions, and organization. The planning aspects of management and the study of fundamental principles and successful practices in getting office work accomplished are stressed. *Prereq.* HRA 4308, HRA 4312 and HRA 4324 or permission of Clinical Coordinator.

HRA 4321 Organization of the Medical Record Department 2 (3 q.h.)

Office management problems and their solution, conceptual framework for the operation of essential management functions, facilities, solutions, and contributions to the office. The study of the controlling function in the Medical Record Department. Quality control, time standards, cash controlling, budgeting and office manuals. Work simplification and systems as they apply to the Medical Record Department. *Prereq.* HRA 4320.

HRA 4324 Applied Medical Record Science 1 (3 q.h.)

Clinical practice in medical record science and management techniques at one or more of the affiliated hospitals and health facilities. *Prereq.* HRA 4312.

HRA 4325 Applied Medical Record Science 2 (2 q.h.)

Continuation of HRA 4324. *Prereq.* HRA 4324.

HRA 4326 Applied Medical Record Science 3 (4 q.h.)

Continuation of HRA 4324. *Prereq.* HRA 4325.

HRA 4330 Medical Record Computer Science (3 q.h.)

Electronic data processing applications in the medical record environment. The study of the hospital information system. Application of computers in hospital methodology and assessing the need for EDP in medical record environment. Trends in the state of the art and future prospects for medical record management. *Prereq.* MIS 4101, and HRA 4314.

HRA 4332 Topics in Health Records (3 q.h.)

A seminar on current issues in health documentation. Open to health records students.

HRM 4301 Organizational Behavior (3 q.h.)

This course is a fundamental presentation of organizational life. Emphasis is placed on structure and discipline of groups typically found in a business setting. Presents issues and data related to leadership styles, employee motivation, and organizational dynamics. The course requires significant student participation.

HRM 4302 Introduction to Human Resources Management (3 q.h.)

Introduces the student to the rights and responsibilities of employer organizations, individual employees, and employee organizations. Understanding of these leads to the functioning and structuring of personnel and labor relations activities within any organization. *Prereq.* HRM 4301.

HRM 4303 Applied Human Resources Management (3 q.h.)

Examines and evaluates various forms of goals and structure of employer and employee organizations in attaining human resource management effectiveness. In particular, examines the process of collective bargaining as it changes in anticipation of future labor-management conditions. *Prereq.* HRM 4302.

HRM 4304 Organizational Behavior and Introduction to Human Resources Management (Intensive) (6 q.h.)

Same as HRM 4301 and HRM 4302.

HRM 4310 Personnel Management 1 (3 q.h.)

Examines organization, the development and role of the human resources manager; the role of the personnel department; and personnel planning and selection, employment development, and evaluation programs. Case discussions in support of text material require active student participation.

HRM 4311 Personnel Management 2 (3 q.h.)

Continues the examination of specialized functions within the human resources management activity. Includes union-management relations, compensation programs, safety, and affirmative action functions. Active class participation, with case study analysis. *Prereq.* HRM 4310.

HRM 4313 Personnel Management (Intensive) (6 q.h.)

Same as HRM 4310 and HRM 4311.

HRM 4320 Techniques of Employee Selection (3 q.h.)

Course covers recruitment, selection, and placement techniques, including interviewing, employment testing, and examining.

HRM 4321 Wage and Salary Administration (3 q.h.)

Course covers wage and salary determination, including merit and incentive plans, wage and salary structure, compensation methods, and impact on employer-employee relations in the economy.

HRM 4322 Employee Benefits (3 q.h.)

Private and public programs directed to job and worker income security are examined, as well as unemployment compensation, training and employment services, private guaranteed income, retirement pension plans and disability, and group insurance.

HRM 4323 Job Evaluation (3 q.h.)

Examines wage-payment systems; reviews theory of wage determination, job elements, rating scales, writing job descriptions and specifications; selection of plans; development of wage structures and integration with the principles of merit rating.

HRM 4324 Creative Problem Solving (3 q.h.)

Opportunity to learn and practice new ways of thinking. Sensing and analyzing problems, producing ideas, evaluating and implementing solutions. The attitudes and climates conducive to creative thinking as well as common barriers are presented. Provides methods for developing imagination, which is the key part of the creative process.

HRM 4330 Employment Rights 1—Wage and Hour Law (3 q.h.)

A thorough examination of minimum wage, hours of work, overtime, child labor laws: Fair Labor Standards Act, Davis-Bacon Act, and Walsh-Healy Act, rules and regulations pertaining to the same and related areas. *Prereq.* HRM 4303.

HRM 4331 Employment Rights 2—Health, Safety, Disability and Workers Compensation Law (3 q.h.)

An in-depth examination of laws dealing with health, safety, disability, and compensation for work-related injuries. Occupational Safety and Health Act, ERISA, So-

cial Security, Unemployment Compensation, Workers Compensation, Federal Employees Liability Act, Jones Act, Longshoremen and Harbor Workers Compensation Act, and other related laws. *Prereq.* HRM 4330.

HRM 4332 Employment Rights 3—Fair Employment Law (3 q.h.)

A comprehensive examination of the old Civil Rights Laws (Sections 1981, 1983, 1985 (3), 1988), Title VI, Title VII, Title IX of the Civil Rights Act of 1964, Age Discrimination in Employment Act, Equal Pay Act, Sections 503, 504 of Rehabilitation Act of 1973, E.O. 11246, Affirmative Action and related areas, and current rulings and court decisions in this area regarding race, sex, religion, national origin, color, age, and disability discrimination. *Prereq.* HRM 4331.

HRM 4340 Public Sector Collective Bargaining in the United States (3 q.h.)

Seminar format includes examination of the recent growing activities of employee unions in national, state, and local governments; weighing the public interest, impact on services, and the study of administration of personnel and labor relations in these localities. *Prereq.* HRM 4303.

HRM 4341 Private Sector Collective Bargaining in the United States (3 q.h.)

Seminar topics include critical issues and problems affecting unionized employees, their organizations, employers, and the public in the private domestic sector of our economy. Research and preparation of position paper by the student; class discussion. *Prereq.* HRM 4303.

HRM 4345 International Labor Relations (3 q.h.)

Seminar comparing and contrasting selected international labor relations systems with that of the United States, examining recent developments such as worker participation and codetermination. Research and preparation of position paper by the student; class discussion. *Prereq.* HRM 4303.

HRM 4346 Workshop in Labor/Management Relations (3 q.h.)

Study of the special skills and knowledge in the negotiation and use of mediation and/or fact finding in the collective bargaining agreement field and in interpreting and applying such agreements and the use of arbitration. Student participation in simulated negotiations and grievance processing. *Prereq.* HRM 4303.

HSC 4210 Basic Nutrition (3 q.h.)

For students in the health field enrolled in their first nutrition course. Provides an overview of nutrition as a young, growing science. The course's focus will be on current basic scientific knowledge of nutrition and how this knowledge can be applied to guide an individual toward making appropriate food choices. It is assumed the student will possess a high school background in chemistry and biology.

HSC 4220 Basic Pharmacology (3 q.h.)

The major purpose of this introductory course is to supply sound and current knowledge of the major classes of drugs. Wherever possible, a presentation of the mode of action, common side effects, dosage, pharmaceutical forms, rate and route of administration, and known interactions and toxicities will be made of the most commonly and currently used drugs to treat certain diseases or specific signs and symptoms. *Prereq.* Chemistry, Anatomy, and Physiology; or permission of instructor.

HSC 4301 Foundations of Medical Science 1 (3 q.h.)

Study of major disease problems in our society and modes of treatment. Discusses organized care, diagnosis, and treatment. Topical emphasis on reproduction, birth, and pediatrics. *Prereq.* Course in Anatomy and Physiology.

HSC 4302 Foundations of Medical Science 2 (3 q.h.)

A continuation of HSC 4301, emphasizing dental health, dermatology, heart disease, cancer, stroke, blood and lymphatic diseases, accidents, and musculo-skeletal, respiratory, and gastro-intestinal diseases. *Prereq.* HSC 4301.

HSC 4310 Public Health 1 (3 q.h.)

Principles of public health. Organization of health agencies and services.

HSC 4311 Public Health 2 (3 q.h.)

Continuation of HSC 4310, emphasizing community organization for health services.

HSC 4315 Environmental Problems and Health (3 q.h.)

A survey of environmental conditions in land, air, and water. The causes of pollution, its effects on humans and other life, and a general discussion of current control methods. Particular emphasis on the significance of environmental problems to the individual.

HSC 4320 Health Science Education 1 (3 q.h.)

Introduction to program planning and the development of educational objectives, with special focus on the use and process of evaluating objectives. Presentation of teaching strategies for the professional practitioner.

HSC 4321 Health Science Education 2 (3 q.h.)

Continuation of HSC 4320, with emphasis on the use of the media and the design of learning packages in health education. *Prereq.* HSC 4320.

HSC 4600 Advanced Nutrition (3 q.h.)

Food chemistry, nutrition, and physiology as applied to diet. Recent developments in normal nutrition. A critical review of the literature, with emphasis on the experimental data on which the principles of human nutrition are based. Emphasis on the concept for people of all

ages. *Prereq.* A basic nutrition course, *General Biology*.

HSC 4601 Advanced Pharmacology (3 q.h.)

Available for students who have completed HSC 4220 or its equivalent.

HSC 4602 Methods and Materials in Public Health Education (3 q.h.)

An introduction to health education in the public health context. *Prereq.* Public Health course or permission of instructor.

HSC 4610 Geriatric Nutrition (2 cl., 3 q.h.)

The focus of this course will be on the current body of scientific knowledge of nutrition as it applies to our elderly population. Emphasis will be placed on the students' ability to integrate basic nutrition principles with the most current information on the aging process. The heterogeneity and variability in health status of the elderly will be stressed. State, local and federal nutrition programs will be reviewed in terms of services, eligibility and effect upon the elderly. *Prereq.* Knowledge of basic nutrition or approval of the instructor.

HSC 4613 Oral Microbiology (3 q.h.)

The qualitative and quantitative composition of the microbiota inhabiting the various ecologic niches of the oral cavity. Methods that have been used to study the oral microbiota are critically evaluated. Ecologic factors such as adhesion, growth factors, and physico-chemical environment controlling the establishment of colonization of organisms in such sites are discussed in detail. The pathogenic potential of plaque microorganisms in terms of caries, periodontal disease, and mixed anaerobic infections will be evaluated. *Prereq.* Chemistry, Microbiology 1.

HSC 4614 Advanced Periodontology 1 (3 q.h.)

Study of the diagnosis, treatment, and control of periodontal diseases, starting with a review of the structure and purposes of the periodontal tissues. Emphasis on the extended functions of the dental hygienist in the recognition and treatment of disease, motivation and instruction of the patient, and periodontal maintenance therapy. Topics for discussion include mucogingival problems, furcation involvements, acute gingival infections, root planing, and gingival curettage. Individual study for the preparation of a paper on a topic of special interest to the student. *Prereq.* Certificate from a dental hygiene curriculum.

HSC 4615 Advanced Periodontology 2 (3 q.h.)

Continuation of HSC 4614, including in-depth study of the special topics selected for term papers in HSC 4614. Other topics covered include periodontic-endodontic lesions, trauma from occlusion, bruxism, and oral manifestations of systemic conditions or treatments such as those produced by diabetes, immunosuppressive drugs, hormones, and effects of aging. Readings based on current journal research reports. *Prereq.* HSC 4614.

HSC 4801 Special Topics in the Health Professions 1 (3 q.h.)

Independent study course to enable the student in health science, health management, and health records to focus on areas of special relevance to his/her professional goals. Materials will be developed with the aid of a faculty adviser to reflect the student's special background and needs. Arrangements should be made with the faculty adviser prior to registration for the course. (Not open to Medical Laboratory Science students.)

HSC 4802 Special Topics in the Health Professions 2 (3 q.h.)

A continuation of HSC 4801. (Not open to Medical Laboratory Science students.)

HSC 4803 Special Topics in the Health Professions 3 (3 q.h.)

A continuation of HSC 4802. (Not open to Medical Laboratory Science students.)

HSC 4804 Special Topics in the Health Professions 4 (3 q.h.)

A continuation of HSC 4803. (Not open to Medical Laboratory Science students.)

HST 4101 History of Civilization 1 (3 q.h.)

A worldwide overview of the development of human institutions from evolution through the end of the European Middle Ages. Emphasis generally will be placed on the continuities and changes that occur within civilizations and on the similarities, differences, and relationships that exist among contemporary civilizations around the world. Taught with a view to drawing out the implications of each historical period for our lives today.

HST 4102 History of Civilization 2 (3 q.h.)

The age of transition to the early modern world, emphasizing the intellectual, technological, and political expansion of Europe and the reactions of the rest of the world to that expansion. Special attention will be given to such topics as the rise of dynastic states, the rise and fall of mercantilism, the scientific revolution, exploration and gunpowder technology, and order and revolution. The period is from the end of the European Middle Ages to the coming of the French Revolution in 1789.

HST 4103 History of Civilization 3 (3 q.h.)

The modern world from 1789 to the present. Topics usually include capitalism and industrialization, nationalism and imperialism, the clash of ideologies in the nineteenth century and a study of total war in the present century. Based on this historical study, the prospects for the future will be explored.

HST 4110 History of Civilization A (4 q.h.)

The major ideas and institutions of civilizations from ancient times to 1648. (Not open to students who intend to receive credit for HST 4101 and/or HST 4102.)

HST 4111 History of Civilization B (4 q.h.)

A continuation of HST 4110, covering the period since

1648. (Not open to students who intend to receive credit for HST 4102 and/or HST 4103.)

HST 4201 American History 1 (3 q.h.)

America from 1763 to 1848, with attention to the development of political, economic, and social institutions in the new republic.

HST 4202 American History 2 (3 q.h.)

The United States from 1848 to 1917, with attention to the coming of the Civil War, economic development thereafter, and the Progressive Era.

HST 4203 American History 3 (3 q.h.)

The United States since 1917, an age of urbanized industrialism and international involvement and crisis.

HST 4241 The Historian's Craft (3 q.h.)

The ways in which the historian studies the past, with emphasis on research and writing.

HST 4263 Oral History (3 q.h.)

Learning history from those who lived it. Students conduct tape-recorded interviews about a selected aspect of twentieth-century history from first-hand experience. Students need access to audio tape recorders.

HST 4301 Technological Transformation of Society (3 q.h.)

The relation between technological innovations and the world in which they take place. Discussion of conditions necessary for discovery and innovation. Impact of technology on political, economic and social environment.

HST 4302 History of Flight and Space (3 q.h.)

Beginning with the dreams of flight of the ancient Greeks and Leonardo da Vinci, the course will trace the history of non-powered flight from the balloon experiments of the Montgolfier brothers to contemporary hang-gliders, powered flight from the Wright brothers through supersonic transport, and rocketry and space travel from their earliest beginnings through *Enterprise*.

HST 4303 History of the Automobile (3 q.h.)

The history of the automobile in Europe and America. Topics include intervention, production, impact on social and economic life, and problems of pollution and energy.

HST 4304 History of Energy (3 q.h.)

The history of the methods by which human beings have mobilized the forces of nature to survive, to alter and improve their lifestyles, and to dominate their fellow human beings. Emphasis is placed on the points of transformation from one energy source to the available alternatives, and the reasons for the choices made. Topics include the change from manpower to animal and machine power, the energy crisis of the sixteenth century, the transformation from wood to water and coal power, the rise of electricity and fossil fuels, the birth of the Atomic Age, and the contemporary history of the oil crisis.

HST 4305 Health and Sickness: Historical Perspectives (3 q.h.)

A survey of medical theories from ancient times to the present, emphasizing concepts of disease causation and the health care systems or institutions derived from them. Medical theory and practice are related to both the general history of the period and the particular political, economic, or social circumstances that influenced attitudes regarding health care.

HST 4360 History of the Olympics (3 q.h.)

The purpose of this course is to describe, rather than glorify, the historical, political, social and economic implications of the modern Olympic Games. Through class discussion, guest lecturers, and films, the student in this course will have the opportunity to develop a sensitivity to the issues and problems previously and presently associated with the Olympic Movement. The future of the Olympic Games is uncertain. Today, many commentators believe that a new perception of Olympism is necessary to guide the Games if they are to survive and emerge from the 20th century intact. The present structure of national and international governing bodies, women in the Olympics, racial issues, political machinations, and suggestions for Olympic reform will be discussed.

HST 4401 Ancient Middle East (3 q.h.)

A study of ancient cultures and peoples in the Middle East to the rise of Islam.

HST 4403 History of the Jews 1 (3 q.h.)

A survey of the Jews from the end of antiquity to early modern times from a cultural and intellectual perspective.

HST 4404 History of the Jews 2 (3 q.h.)

The role and position of the Jews in modern history.

HST 4407 Ancient Greece (3 q.h.)

The origin and development of Greek civilization.

HST 4408 Ancient Rome (3 q.h.)

Roman civilization in ancient times, with emphasis on the rise of the Republic and the decline of the Empire.

HST 4410 The Middle Ages (3 q.h.)

The history of Europe from the fall of Rome to 1350.

HST 4411 Byzantine History (3 q.h.)

A political and cultural history of the Eastern Christian world from the fourth century to the sacking of Constantinople in 1453.

HST 4412 Islamic History (3 q.h.)

The history of the Muslim Arab world from the seventh century to the end of the Abbasid Caliphate in 1258.

HST 4413 Ottoman History (3 q.h.)

A study of the rise, glory, decay, and attempts at reform of the Ottoman Empire from the thirteenth century to World War 1.

HST 4420 Renaissance and Reformation (3 q.h.)

The history of Europe from 1350 to 1648, with attention to intellectual and religious life and political and economic developments.

HST 4423 Europe 1789-1870 (3 q.h.)

Europe from the French Revolution to the Franco-Prussian War with a stress on the struggles for liberalism and nationalism.

HST 4424 Europe 1870-1921 (3 q.h.)

The background of World War I—nationalism, militarism, imperialism, the alliance system—and the making of war and peace.

HST 4425 Europe since 1921 (3 q.h.)

Europe between the wars; World War II, the Cold War; efforts to unify the continent.

HST 4430 European Social and Economic History to 1000 (3 q.h.)

The development of society and the economy in ancient Greece and Rome and in the early Middle Ages. Topics include the rise of Christianity and the origin and growth of feudalism and manorialism.

HST 4431 European Social and Economic History 1000-1648 (3 q.h.)

The development of society and the economy in the late Middle Ages and in early modern times. Topics include the decline of feudalism and manorialism, the rise of capitalism, the Reformation, and the Renaissance.

HST 4432 European Economic and Social History since 1648 (3 q.h.)

A topical survey of European economic and social development from 1648 to the present.

HST 4433 Population in History (3 q.h.)

An application of the principles of demography to European history from Roman times to the present.

HST 4434 Family History (3 q.h.)

The history of the family in Europe and America from 1600 to the present. Topics include the changing nature and role of the family, marriage and divorce, child rearing, and aging.

HST 4435 Women in European History (3 q.h.)

An historical examination of the position and role of women in European life.

HST 4436 European Colonialism (3 q.h.)

The building of colonial empires by European nations after 1500, with attention to exploration and conquest, colonial administration, and the movements toward independence.

HST 4437 European Urban History since 1750 (3 q.h.)

The relationship of industrialization and urbanization in Europe from the mid-eighteenth century to the present.

HST 4443 European Intellectual History since 1815 (3 q.h.)

The main currents of European thought considered in their social and political contexts from Romanticism to the present.

HST 4450 England to 1660 (3 q.h.)

The Anglo-Saxons; the Norman conquest; the rise of monarchy; religious developments.

HST 4451 England since 1660 (3 q.h.)

England since the Restoration of the Stuarts with attention to the development of Parliament and democracy.

HST 4455 Ireland since 1800 (3 q.h.)

A study of the Irish question in British politics from the Act of Union to the present.

HST 4460 Hitler's Germany (3 q.h.)

A study of the origins and nature of Hitler's Third Reich, emphasizing the personal lives of Nazi leaders in an attempt to understand how seemingly ordinary people could enthusiastically promote wars of aggression and revel in genocidal policies.

HST 4465 History of Eastern Europe 1 (3 q.h.)

Pre-political Slavic peoples on the eve of the fall of the Roman Empire; Christianity from Rome and from Constantinople and the Kingdom of Moravia; the genesis of Poland and the western Slavs and their relationship with Kievan Russia and the eastern Slavs. The decline of Bulgaria and the rise of Hungary; the Polish-Lithuanian Union of 1386 and the origin of the isolation of Russia from western Europe; the Knights of the Teutonic Order and the secularization of Prussia; the Ottoman advance into eastern Europe.

HST 4466 History of Eastern Europe 2 (3 q.h.)

Stefan Bathory and papal interest in Orthodox Russia; Western interference in Russia's "Time of Troubles"; Swedish invasions and the Northern War; the decline of Poland through Stanislaw Poniatowski and Czarina Catherine the Great of Russia. The partitions of Poland and Tadeusz Kosciuszko; Napoleon; revolutionary movements through 1848; Slavic romantic revolutionaries and the *fin de siècle*. World War I and the Reconstruction of Eastern Europe. Hitler, Stalin, and World War II. The "Iron Curtain."

HST 4467 Russia to 1917 (3 q.h.)

The emergence of Russia as a recognized European power; the history of the Russian people and government to the revolutions of 1917.

HST 4468 Russia since 1917 (3 q.h.)

The revolutions of 1917 and the subsequent history of the Russian people and government, with special emphasis on foreign relations.

HST 4469 Russian Expansionism (3 q.h.)

Russia's quest for territory after 1500, with attention to

the conquest of neighboring territories, the Sino-Russian disputes, and current issues in Soviet geopolitics.

HST 4501 American Indians (3 q.h.)

A survey of native Americans from pre-Columbian times to the present.

HST 4502 Colonial America (3 q.h.)

The exploration and settlement of North America; the development of political, social, and economic institutions; international rivalry to 1763.

HST 4503 The American Revolution (3 q.h.)

British-American relations after 1763; war and peace.

HST 4511 Populism and Progressivism (3 q.h.)

A topical history of the United States from 1890 to 1920 concentrating on its reactions to industrialization and urbanization.

HST 4512 The Age of Roosevelt (formerly The United States 1920-1945) (3 q.h.)

A topical history of the United States in time of world war, prosperity, depression, and war again.

HST 4513 Contemporary America (formerly The United States since 1945) (3 q.h.)

The American people from the close of World War II to the present.

HST 4520 The Growth of American Government (3 q.h.)

Analysis of the change in government's functions, size, cost, and impact, with primary chronological focus on the twentieth century.

HST 4523 American Diplomatic History (3 q.h.)

Selected topics in the history of American foreign relations and policy since 1789.

HST 4525 American Expansionism (3 q.h.)

A study of territorial expansion of the United States after independence, with attention to the forces leading to acquisition, the methods of acquiring property, and the consequences of expansionism.

HST 4530 American Economic History (3 q.h.)

Selected topics in the development of the capitalist economy in America, with attention to the role of government since 1789.

HST 4540 American Social History (3 q.h.)

Selected topics in the life of the American people since 1789.

HST 4542 Women in American History (3 q.h.)

An historical examination of the position and role of women in American life.

HST 4543 African-American History (3 q.h.)

The history of African-Americans from colonial times to the present.

HST 4545 History of the Professions (3 q.h.)

The evolution of the classic professions of law and med-

icine in the nineteenth century, and a study of the emergence of new professions such as engineering, nursing, accounting, and social work. Themes include professional-client, professional-employer, and professional-government relations, as well as education, professional organizations, and sex stereotyping.

HST 4546 History of Criminal Justice in America (3 q.h.)

The evolution of the criminal justice system in the United States, with special emphasis on the impact of English common law, the changing role of law enforcement officers, reform movements, the female offender, the Black experience, and the changing meaning of law and order in the United States.

HST 4547 History of Sport in America (3 q.h.)

A history of the major sports and their impact on American life.

HST 4550 Boston to 1822 (3 q.h.)

The Town of Boston from its establishment in 1630; the development of political, economic, and social institutions.

HST 4551 Boston since 1822 (3 q.h.)

The City of Boston, annexations, changes in the ethnic nature of the people.

HST 4602 Contemporary Latin America (3 q.h.)

The social, economic, and political development of the Latin American republics in the twentieth century.

HST 4611 Africa since 1885 (3 q.h.)

The European impact on Africa, the rise of African nationalism, the emergence of independent African states, their relations with other nations.

HST 4622 Modern Middle East (3 q.h.)

The Middle East since 1914, with attention to Zionism, Pan Arabism, the effects of two world wars, and the postwar settlements.

HST 4632 China since 1850 (3 q.h.)

A century of China's history, emphasizing Western impact on Chinese civilization, China's struggle to maintain independence, and the victory of communism in the mid-twentieth century.

HST 4636 Japan since 1850 (3 q.h.)

An analysis of Japanese domestic development and foreign relations since the mid-nineteenth century.

HST 4640 Third World Women (3 q.h.)

An exploration of the role of women in the less developed third world areas, with special emphasis on factors of change, development, and continuity.

HST 4645 History of the Vietnam Wars (3 q.h.)

A history of military conflict in Vietnam with attention to the rise of the Viet Minh during World War II, the struggle against the French in the first Indochina War, the impact of the Cold War, and the involvement of the United States after 1950 in Laos and Cambodia (now Kampu-

chea) as well as Vietnam. Emphasis will be placed on the roles of communism and nationalism in Indochina, and on the motives for American intervention. Films revealing American reaction to the escalating conflict will be shown.

HST 4801 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-level course in their major area on an individual basis. Petitions and procedural instructions are available from University College Social Science Programs, 204 Churchill Hall, 617-437-2416. *Prereq.* 87 q.h.

HST 4802 Directed Study 2 (3 q.h.)

An opportunity to initiate a second individual study as described above. *Prereq.* HST 4801.

HST 4811 Honors Program 1 (4 q.h.)

Prereq. Approval of the Dean.

HST 4812 Honors Program 2 (4 q.h.)

Prereq. HST 4811.

HST 4813 Honors Program 3 (4 q.h.)

Prereq. HST 4812.

HST 4821 Field Work in History (6 q.h.)

Extracollegiate experience in historical research or historical agencies. (Refer to page 59 for general description of field work courses.) *Prereq.* Survey courses in World Civilization, American History, and The Historian's Craft.

HTL 4301 Introduction to Hotel and Restaurant Management (3 q.h.)

A survey of the hospitality industry in today's economy. Emphasis on industry growth and development, management problems, and principles of hotel and restaurant management.

HTL 4303 Front Office Management (3 q.h.)

The role and functions of the front office will be studied as they relate to the operation of the entire hotel. The following areas are covered: front office structure, registration, payment, reservations, and night audit.

HTL 4304 Hotel and Restaurant Law (3 q.h.)

An introduction to the fundamental laws, rules, and regulations applicable to the hospitality industry. Hospitality management policies are presented to minimize the danger of legal liability. Innkeeping, restaurant, alcoholic beverage, and labor laws and legislation affecting the hospitality industry are the major themes of the course.

HTL 4305 Food Preparation 1 (3 q.h.)

Introduction to the fundamentals of food preparation and service, with emphasis on terminology and equipment of the food service industry. Students receive classroom instructions and participate in demonstrations of preparing food in a small-quantity laboratory. Menu planning, requisitioning, pricing, as well as preparation and service, are covered. (Laboratory fee)

HTL 4306 Food Preparation 2 (3 q.h.)

A continuation of HTL 4305. *Prereq.* HTL 4305. (Laboratory fee)

HTL 4307 Food Service Engineering and Sanitation (3 q.h.)

Examines the organization of the maintenance and engineering function and provides the technical information necessary to establish effective preventive programs. Details the fundamentals of sanitation for food service employees and covers practical guidance in safe food handling. This course provides the future hospitality manager with the opportunity for certification in Applied Foodservice Sanitation from the National Institute for the Foodservice Industry.

HTL 4308 Food and Beverage Cost Control (3 q.h.)

Introduces management attitude toward cost controls through analysis of every aspect of the food service operation. Topics include classification of food service facilities, cost accounting, purchasing, inventory, and production control methods. The essentials of food and beverage controls. Management-mindedness is developed through the examination of organizational structures of foodservice, and specific topics such as menu pricing, break-even analysis, and cost-volume-profit theory. Emphasis is placed on forecasting and achieving a profitable bottom line.

HTL 4309 Managerial Accounting for the Hospitality Industry (3 q.h.)

A study of the financial practices and systems used in the hospitality industry. Controls, budgeting, financial statements, and specialized industry accounting procedures are analyzed. *Prereq.* ACC 4102.

HTL 4310 Hospitality Marketing Management (3 q.h.)

An analysis of the market in which the hospitality industry operates. Students have the opportunity to develop and implement a marketing plan to meet operational goals. *Prereq.* MKT 4301.

HTL 4311 Design and Layout (3 q.h.)

A consideration of the design and layout applicable to the hotel and restaurant industry.

HTL 4312 Purchasing Methods for Food and Lodging Industry (3 q.h.)

This course covers the broad range of purchasing responsibilities of the hospitality manager. It is designed to develop familiarity with not only tangibles such as food, beverages, equipment, furnishings and lodging supplies, but also such intangibles as insurance, contract services (security, cleaning, trash removal, architectural and advertising), commercial leasing, and maintenance (plumbing, fire protection, decorating and landscaping). Students examine the functions of the market and buyer, bidding, the use of specifications, inventory controls and cost analysis. Lectures are combined with on-site visitations to examine the practices of functioning middle managers.

HTL 4313 Introduction to Tourism (3 q.h.)

Introduction to the science, art, and business of attracting, transporting, and accommodating visitors and graciously catering to their needs and wants. Topics include: sociology, psychology, marketing, and the economics of tourism.

HTL 4314 Food Science and Technology (3 q.h.)

An introductory course dealing with principles of food processing, quality assurance, and quality control in assessing product stability, produce changes, and consumer acceptance. Designed to provide an understanding of the applications of these principles to food and food service operations.

HTL 4315 Management Systems for the Hospitality Industry (3 q.h.)

A study of the information systems utilized in the hospitality industry to provide better management information for analysis and decision-making. *Prereq.* MIS 4102.

IM 4301 Production Management 1 (3 q.h.)

Provides an introduction to the planning and control of operations, whether in a manufacturing, wholesaling, retailing, or institutional governmental setting. Deals with the analytical methods employed, the design of the system, and the control devices for both quality and quantity.

IM 4302 Production Management 2 (3 q.h.)

Selected readings in modern production management techniques. Facilities planning and design, including plant layout, materials handling, and related equipment. *Prereq.* IM 4301.

IM 4303 Production Management (Intensive) (6 q.h.)

Same as IM 4301 and IM 4302.

IM 4310 Manufacturing Processes (3 q.h.)

Production processes and material selection in the production and manufacture of hard goods, including selection of best methods by study of casting, machinery, forming, joining, extrusion, finishing, and assembly. Analyzes advanced manufacturing processes, including mass production, numeric control, central vs. line layout systems, automated systems, computer control equipment and systems, equipment and machinery selection, and replacement policies.

IM 4311 Methods Analysis, Motion and Time Study (3 q.h.)

Methods analysis and plant layout; work design, operation analysis, human-machine relationship; elements of motion and time study. Studies measurement techniques and application; as well as production standards development for job shop operations; applying curve, table, equation, nomograph, family, and multivariables techniques; and utilizing work sampling methods.

IM 4312 Operations Management (3 q.h.)

Provides the opportunity for development of student skills in analyzing and managing the operations of a

manufacturing operation. Integrates the techniques and methods, both quantitative and qualitative points of view, and applies them to problems that arise in planning and controlling manufacturing and other operating systems.

IM 4313 Cases in Industrial Management (3 q.h.)

Cases describing particular operating situations as they are faced by managers in business in which the students base their analyses on an array of facts and judgments. The student has the opportunity to become aware of the skills the manager brings to bear on business problems requiring a diverse background of knowledge about the technologies and techniques of the field. The basic disciplines in the quantitative and behavioral sciences and an understanding of the specific situational context are integrated. Cases are designed to provide the necessary background in topics specifically relevant to production problems.

IM 4314 Production Control and Inventory Management (3 q.h.)

Theory and practice of the economic control of inventories are developed. A broad spectrum of models for production control and inventory management is examined. Solutions are sought by analytical methods and by numerical simulation. Goals include bringing the range of concept and techniques to the point of useful application and practical design.

IM 4315 Industrial Decision Making 1 (3 q.h.)

An application-oriented introduction to prescriptive decision analysis. The course examines the systematic approach to problem solving and decision making, decision theory, structure of human decisions, and modeling of the decision process. *Prereq.* MTH 4112.

IM 4316 Industrial Decision Making 2 (3 q.h.)

Application of probability and utility theory, psychology, and economics to the decision process. Topics covered include the perception of options, uncertainties and objectives, decision trees, and other modes of representation. Course also covers criteria of choice, including preference and utility, attitude toward risk, expected value. Practical usefulness of techniques, with application to career planning, job and organization design, and managerial effectiveness. Surveys current practices, using real world cases. *Prereq.* IM 4315.

IM 4317 Materials Management (3 q.h.)

Topics include the development and examination of materials management, including objectives, organization, and functions, as they relate to cost improvement, investment control, and ability to serve the market; materials system; selected case studies.

IM 4318 Economic Analysis in Industry (3 q.h.)

Examination of the principles and techniques needed for analysis of the acquisition and retirement of capital goods by industry and government. Development of the assumptions underlying the various measures of anticipated profitability of capital expenditures, their uses and limitations.

IM 4319 Value Management (3 q.h.)

An organized technique for challenging costs by analyzing a product or method in terms of value, function, and costs without sacrificing essential quality.

IM 4320 Managing for Results (3 q.h.)

Serves as a forum for the discussion of the wide-ranging theories of Peter Drucker. Emphasis is placed on the concepts and methods available to the results-oriented manager. Topics are derived from selected writings of Drucker. Relations between theory and practice, including implementation, will be established.

IM 4321 Management and Operational Control Systems (3 q.h.)

Analysis of the nature of control in general and the characteristics of management control and operational control. Study of control structures, processes, and bases for design and implementation.

IM 4340 Manufacturing Seminar 1 (3 q.h.)

Course examines in depth the problems of manufacturing operations at the plant manager level, including analysis of manufacturing issues and controls of the manufacturing process; selected case studies are an important part of the course. *Prereq.* IM 4310 and IM 4314.

IM 4341 Manufacturing Seminar 2 (3 q.h.)

A program of independent study on an approved topic in a particular area of Industrial Management, under the supervision of a faculty member. *Prereq.* IM 4340.

INT 4100 Planning a Business Career (3 q.h.)

Helps students develop career decision-making skills. Students participate in exercises to assist in identifying and evaluating their interests, values, skills, and competencies. Resources and strategies are presented to help students research various business careers, including practice in the area of field survey techniques to test their interest in specific career areas. Resume preparation and interviewing techniques are also introduced.

INT 4101 The Elements of Management (3 q.h.)

Provides a knowledge base of the technical, quantitative, and specialized areas of management. Familiarizes students with the language and operational complexities of the manager's job and offers an opportunity to raise their level of diagnostic, analytic, and integrating competence. The course is divided into four three-week modules: Module 1: Economics and Finance; Module 2: Budget and Accounting; Module 3: Marketing; Module 4: Information Systems.

INT 4102 Women in Business Organizations 1: Structural and Behavioral Fundamentals (3 q.h.)

Identification of effective management practices and the inhibiting factors that impede women from acquiring them. The importance of effective communication and dealing with criticism is stressed. Validity of common

behavioral assumptions are tested, including women's fears of success, inadequate motivation, social exclusion, disinclination to take charge or withstand pressure.

INT 4103 Women in Business Organizations 2: Leadership and Communications (3 q.h.)

The dynamics of leadership as they relate to the successful woman manager: managing conflict, securing control, instituting change, motivating, disciplining, and gaining respect. Distinguishing supervisory from management performance standards. Role playing and case studies assist in the development of leadership and problem-solving capabilities. *Prereq.* INT 4102 or *equiv.*

INT 4110 Self-Assessment and Career Development (3 q.h.)

Understanding the concept of life/career planning and its practical implications for future education and/or work. Students complete a self-assessment, including an evaluation of their competencies and skills, and receive training in career decision-making with practice in the use of field survey techniques to test their interest in specific career areas. An overview of job campaigning, including an introduction to resume preparation and interviewing techniques.

JRN 4112 Fundamentals of Newswriting (3 q.h.)

Obtaining and organizing facts, the writing of basic news stories. Subjects covered may include interviewing, story structure, news values, and leads.

JRN 4113 Newsgathering and Reporting (3 q.h.)

Analysis of different types of news stories through assignments and class discussion. Introduction to government and court reporting, and multi-sound stories are among the topics covered. *Prereq.* JRN 4112 or *equiv.*

JRN 4114 News Reporting Techniques (3 q.h.)

This course focuses on investigative reporting, feature writing, and other assignments requiring significant research and multiple sources. Included are copy-editing exercises and assignments in specialized writing. Libel, privacy invasion, and other legal matters affecting journalism are studied and discussed. *Prereq.* JRN 4113 or *permission of instructor.*

JRN 4250 Interpreting the News (3 q.h.)

This course analyses the impact — both good and bad — of newspapers, television, radio, and other news media on American life. Students have the opportunity to learn how news is gathered, processed, and disseminated by the various media. Among the questions discussed are: "How much do we need the press as a watchdog on government?" and "Who is watching the watchdog?"

JRN 4300 Photo Journalism (3 q.h.)

Covers the basics of how to tell a story with a camera. Elementary darkroom procedures are covered, includ-

ing cropping, assignment techniques, classroom theory, and photo caption methods. Class size is limited. (\$35 Laboratory fee)

JRN 4335 Public Relations Basics (3 q.h.)

Study of the concepts, components, and methods of public relations, including planning and research, processes of influencing public opinion, policies concerning corporate and institutional relations with the media and various publics.

JRN 4336 Public Relations Practices (3 q.h.)

Specific practices and techniques employed in public relations, especially in relation to information handling and organization of activities and events; how to define PR "targets", analysis of dealing with such publics as employees, stockholders, consumers.

JRN 4337 Public Relations Problems (3 q.h.)

Research and communication techniques used to solve public relations problems; practical experience with individual PR projects, programs, and campaigns.

JRN 4349 Advertising Basics (3 q.h.)

Study of the research, planning, creative, and media functions of advertising and how they interrelate. Application of advertising principles to consumer, retail, political, and other ad campaigns.

JRN 4574 Newspaper/Magazine Economics and Management (3 q.h.)

Examination of the management structures and business priorities of newspapers and magazines. The interaction and interdependence of the editorial, administrative, advertising, production, and circulation departments. The economic role of print media in the community.

LEN 4100 Criminal Investigation and Case Preparation 1 (3 q.h.)

General investigation techniques; collection and preservation of evidence and information; consideration of particular crimes, including arson, sexual offenses, larceny, burglary, robbery, forgery, and homicide.

LEN 4101 Criminal Investigation and Case Preparation 2 (3 q.h.)

Conduct of raids, surveillance, and undercover operations, methods of preparing a case for court, specialized scientific methods, exercises involving techniques of prosecution and cross-examination. *Prereq.* LEN 4100.

LEN 4102 Comparative Police Systems (3 q.h.)

A study of existing police systems in other jurisdictions; examination of the organization, administration and practices in police agencies in the United States, Europe, and the United Kingdom.

LEN 4103 Introduction to Industrial Security (3 q.h.)

The historical, philosophical, and legal basis of security; a survey of administrative, personnel, and physical aspects of the security field.

LEN 4104 Traffic Safety and Control 1 (3 q.h.)

A study of the state of the art of highway safety, research, traffic accident investigation, prevention, rescue, automated system of vehicular traffic accident and moving violation data collection, analysis and utilization, speed control, speed zoning techniques, radar, vascar, laws, rules, and regulations.

LEN 4105 Traffic Safety and Control 2 (3 q.h.)

An in-depth study of traffic law enforcement, techniques of selective enforcement, traffic surveys, engineering, safety education, and evaluation of current traffic programs. *Prereq.* LEN 4104.

LEN 4106 Police Public Relations (3 q.h.)

The principles of sound public relations for the entire police operation; writing; public speaking, conferences, and all news media; consideration of police image and public opinion.

LEN 4107 Police Community Relations (3 q.h.)

A survey of the role and function of police in intergroup relations; human relations and minority groups; responsibilities of police regarding civil rights, civil disorders, and public protection.

LEN 4108 The Patrol Function 1 (3 q.h.)

The planning process related to the administration of the patrol function. Consideration of theoretical and operational aspects of various patrol systems: random patrol, response force, split force, team policing; probability theory; and the relation between patrol and crime levels.

LEN 4109 The Patrol Function 2 (3 q.h.)

A continuation of LEN 4108, with emphasis on the goals and objectives of police management models. Discussion and analysis of manpower, work load, response time, patrol communications, preventive strategies, and inputs and outputs of patrol systems evaluated in quantitative form. *Prereq.* LEN 4108.

LEN 4110 Introduction to Criminalistics 1 (3 q.h.)

A survey of the elements of microscopy, spectroscopy, and chemistry as applied to trace evidence in criminal investigations, responsibilities of technician, investigator, and others.

LEN 4111 Introduction to Criminalistics 2 (3 q.h.)

Toxicology and serology; procedures related to other physical evidence; laboratory demonstrations and practical exercises. *Prereq.* LEN 4110.

LEN 4112 The American Correctional System (3 q.h.)

A critical survey of the correctional field, covering probation, institutions, and parole, including historical development, program content, and current problems and needs.

LEN 4113 Social Deviance 1 (3 q.h.)

A consideration of the social problems of social disorganization, mental disorders, drug addiction, alcoholism, suicide, and sexual behavior.

LEN 4114 Social Deviance 2 (3 q.h.)

Continuing consideration of world's population crisis, race and ethnic relations, family disorganization, work and automation, poverty and disrepute, war and disarmament. *Prereq.* LEN 4113.

LEN 4115 Correctional Administration 1 (3 q.h.)

Correctional processes and services, standards, personnel, principles of management, allocation of resources, training of staff. Study of regular and special programs, volunteers, and outside contracts.

LEN 4116 Correctional Administration 2 (3 q.h.)

A further study of the principles of management; sentence reduction, discharge planning, and work release administration. Types of institutions; compacts; regional concepts, planning, organizing, controlling and directing corrections, budgeting. *Prereq.* LEN 4115.

LEN 4117 Investigative Report Writing (3 q.h.)

Report content and writing, exercises in accurate terminology and concise reporting, interpretation and evaluation of information, practical report-writing projects.

LEN 4118 Police Work with Juveniles (3 q.h.)

The role of the police in delinquency prevention, with emphasis on theory, administration, control, treatment, confinement, community resources, and relationships with the public and the juvenile court.

LEN 4119 Delinquency Prevention (3 q.h.)

A survey of delinquent behavior, causation, and delinquency prevention programs; seminar projects for discussion of specific problems and general principles in establishing delinquency prevention services.

LEN 4120 Juvenile Corrections 1 (3 q.h.)

A study of police, detention, petition, and hearings related to juveniles; juvenile court procedures, philosophy, and terminology; adjudication.

LEN 4121 Juvenile Corrections 2 (3 q.h.)

Social workers, probation officers, judges, psychologists, and psychiatrists in relation to juveniles; institutions; aftercare; prevention. *Prereq.* LEN 4120.

LEN 4122 Industrial Fire Prevention (3 q.h.)

Principles and practice of fire safety, including organization and management responsibility, property conservation, safeguards for construction, fire control apparatus and functions, engineering, and scientific data on fires and related perils.

LEN 4123 Retail Security (3 q.h.)

The operation of security departments, including functions of mercantile establishments; dishonest employees; shoplifters; management and public relations; receiving, shipping, and warehousing; special laws and procedures.

LEN 4124 Bank Security Measures (3 q.h.)

An in-depth study of the principles and practices of security measures for banks and other financial insti-

tutions and the preparation of rules establishing minimum standards under current federal and state legislation

LEN 4125 Seminar in Security (3 q.h.)

An analysis of current problems in security, such as growth patterns, salary structures, training and education, existing weaknesses; field trips, individual study assignments, and required oral and written reports.

LEN 4126 Seminar in Correctional Practices (3 q.h.)

An analysis of current problems in corrections, designed to meet the needs and interests of specific groups of students, practitioners, supervisors, and administrators of correctional programs.

LEN 4127 Current Security Problems (3 q.h.)

An analysis of special problem areas such as security education and training, community relations, white-collar crime, drug abuse, theft control, shoplifting, document control, subversion and sabotage, protection of classified information, control of proprietary information and business espionage, labor problems, civil disturbances, and natural and man-made disasters.

LEN 4128 Seminar in Law Enforcement (Victimology) (3 q.h.)

Criminal-victim relationship, with emphasis on victim-precipitated crimes and compensation to the victims. Consideration is given to concept and significance of "victimology," time, space, sex, age, and occupational factors in criminal-victim relationships; victims of murder, rape, other violent crimes, and property crimes; victim typology; the public as victim; restitution to victims of crime; compensation to victims of crime; and the functional responsibility of the victim.

LEN 4129 Seminar in Law Enforcement (Criminal Behavior) (3 q.h.)

An examination of crime and criminal behavior as a social phenomenon. Three principal divisions: sociology of law and its effect; criminal etiology and the scientific analysis of the causes of the crime; evaluation of the various rationales of detention as a crime-control factor.

LEN 4130 Seminar in Law Enforcement (Drugs) (3 q.h.)

Designed to acquaint the student with the needs of law enforcement personnel in the area of drug abuse: the law, society classification, distribution, identification, and the effects of drugs.

LEN 4131 Seminar in Law Enforcement (Data Processing) (3 q.h.)

An introduction to automated systems utilized in the field of law enforcement, basic program concepts, filing and sorting techniques, available input and output storage media, types and sources of data communications and applications.

LEN 4132 Administration of Justice 1 (3 q.h.)

A survey of the evaluation of justice from the earliest

times; developed historically, with particular emphasis on Western justice and American justice, including the roles played by the judiciary, with stress on due process and the constitutional guarantees.

LEN 4133 Administration of Justice 2 (3 q.h.)

An analysis of the various groups and professions in the American justice system. Emphasis is fixed on human relations, efficiency, current trends, and the future role of the American criminal justice system. *Prereq.* LEN 4132.

LEN 4134 Civil Law in Criminal Justice 1 (3 q.h.)

Civil matters such as defamation, negligence, assault and battery, false confinement, trespass, conversion, and agency relationships.

LEN 4135 Civil Law in Criminal Justice 2 (3 q.h.)

Civil matters such as the law of contracts, bailments, domestic relations, and business relationships that should be known to and distinguished by law enforcement personnel. *Prereq.* LEN 4134.

LEN 4136 Criminal Law 1 (3 q.h.)

Exploration of the major problems of criminal law as a device for controlling undesirable behavior. Course is intended to give students a working knowledge of the basic questions of public policy involved in the administration of criminal justice and the legal principles of determining criminal liability. Includes a consideration of specific crimes, elements of a crime, parties to a crime, and defenses to a crime.

LEN 4137 Criminal Law 2 (3 q.h.)

Consideration of vital constitutional and statutory concepts, including self-incrimination, search and seizure, law of arrest, criminal procedure and responsibility, confessions, right to counsel, and conduct of trial in the district, superior, appellate, and federal courts. *Prereq.* LEN 4136.

LEN 4138 Evidence and Court Procedure 1 (3 q.h.)

Rules of evidence, principles of exclusion, evaluation and examination of evidence and proof.

LEN 4139 Evidence and Court Procedure 2 (3 q.h.)

Competency, consideration of witnesses, laws of search and seizure, court procedures, moot court exercises. *Prereq.* LEN 4138.

LEN 4140 Fire Investigation and Arson 1 (3 q.h.)

A study of the elementary chemistry of combustion, including sources of ignition, fuels, the nature and behavior of gases and their toxicity. The combustion properties of nonsolid fuels as opposed to the combustion properties of solid fuels are considered. Consideration is also given to explosions associated with fires. Discussions of the socio-economic aspects of fire, including the pyromaniac and his or her physiological involvement.

LEN 4141 Fire Investigation and Arson 2 (3 q.h.)

A concentrated approach is taken in dealing with the firebug and his or her sociological orientation. A dis-

cussion of carbon, hydrogen, and oxygen as major elements in all fires and the flameless ignition effect. Methods of fireproofing are also considered and references made to various types of building materials, as well as the role of pyrolysis. Fire patterns of structural fires and asphyxiation, along with the legal aspects of arson, are also considered. *Prereq.* LEN 4140.

LEN 4142 Massachusetts Criminal Law (3 q.h.)

A comprehensive study of Massachusetts criminal law and its application by law enforcement officers. Areas of study include common law, criminal statutes, annotated laws, criminal case law, Supreme Court decisions, and motor vehicle law.

LEN 4143 Alcohol Problems in Law Enforcement (3 q.h.)

Acquaints the student with the current state of knowledge on society, culture, and drinking patterns; the variety of alcohol problems that confront peace officers; discussion of the range of solutions available.

LEN 4144 Security Administration 1 (3 q.h.)

The historical, philosophical, and legal basis of security operations. A study of various security methods, utilizing personnel, equipment, and procedures.

LEN 4145 Security Administration 2 (3 q.h.)

The organization, administration, and management of the security function; the systems approach to security operations, utilizing personnel and equipment resources. *Prereq.* LEN 4144.

LEN 4146 Hazardous Materials (3 q.h.)

A survey of hazardous materials such as flammable fluids and gases, explosives, reactive materials, radioactive materials, and toxic substances. A discussion of methods of storage, handling, and transportation of such materials in accordance with pertinent regulations. Emphasis is on the control of hazardous materials emergencies.

LEN 4147 Legal Aspects of Security Operations (3 q.h.)

The study of areas of law relevant to the security professional, including related aspects of criminal, civil, regulatory, and labor law.

LEN 4148 Introduction to Government Security Programs (3 q.h.)

An introduction to various government security programs, including the Department of Defense, Industrial Security Program (DCASR), and the Nuclear Regulatory Commission Security Standards, and an analysis of the policy and legal basis for such programs.

LEN 4149 Logical and Ethical Foundations of Decision Making 1 (3 q.h.)

An introduction to the basic principles of logical thought, aimed at showing ways of arriving at a well-founded conclusion, of criticizing and testing for errors in an argument, and of recognizing arguments presented by others. Focus is on real-life situations and practical decision making.

LEN 4150 Logical and Ethical Foundations of Decision Making 2 (3 q.h.)

A study of basic theories concerning questions of morality and justice, especially as they apply to the concerns of those in the criminal justice system, carrying over into an examination of various viewpoints concerning questions of punishment, e.g., why people are punished, and under what conditions a wrongdoer is to be excused from punishment. *Prereq.* LEN 4149.

LEN 4151 Logical and Ethical Foundations of Decision Making 3 (3 q.h.)

Examination of a variety of areas that are important from moral and social points of view and of concern to the criminal justice system, such as victimless crimes, the nature and function of the law, and the nature of the professions. Real-life application of the questions in these fields will be stressed. *Prereq.* LEN 4150.

LEN 4152 Domestic Violence (3 q.h.)

Central focus is on the effects of family abuse and violence. The interrelations of the police, the courts, and the human service worker with the family membership. Topics include the changing role of parents and children in today's world, battered wives, child abuse and neglect, sexual abuse, effects of divorce, alcohol and drugs, children's rights, government and private agencies concerned with neglect and abuse, case studies, and the laws and legal process involved in domestic violence. Open to students in law enforcement, criminal justice, and the helping professions associated with the course topic.

LEN 4153 Criminal Law (Intensive) (6 q.h.)

Combination of LEN 4136 and LEN 4137.

LEN 4154 Evidence and Court Procedure (Intensive) (6 q.h.)

Combination of LEN 4138 and LEN 4139.

LEN 4155 Civil Law in Criminal Justice (Intensive) (6 q.h.)

Combination of LEN 4134 and LEN 4135.

LEN 4156 Traffic Safety and Control (Intensive) (6 q.h.)

Combination of LEN 4104 and LEN 4105.

LEN 4157 Introduction to Criminalistics (Intensive) (6 q.h.)

Combination of LEN 4110 and LEN 4111.

LEN 4158 Social Deviance (Intensive) (6 q.h.)

Combination of LEN 4113 and LEN 4114.

LEN 4159 The Patrol Function (Intensive) (6 q.h.)

Combination of LEN 4108 and LEN 4109.

LEN 4160 Criminal Investigation and Case Preparation (Intensive) (6 q.h.)

Combination of LEN 4100 and LEN 4101.

LEN 4161 Fire Investigation and Arson (Intensive) (6 q.h.)

Combination of LEN 4140 and LEN 4141.

LEN 4162 Correctional Administration (Intensive) (6 q.h.)

Combination of LEN 4115 and LEN 4116.

LEN 4163 Administration of Justice (Intensive) (6 q.h.)

Combination of LEN 4132 and LEN 4133.

LEN 4164 Logical and Ethical Foundations of Decision Making (Intensive) (9 q.h.)

Combination of LEN 4149, LEN 4150, and LEN 4151.

LEN 4165 Security Administration (Intensive) (6 q.h.)

Combination of LEN 4144 and LEN 4145.

LEN 4300 Human Rights in Corrections (3 q.h.)

Consideration of the special practices and problems in the protection of human rights in the institutional environment; legal and practical aspects.

LEN 4301 Basic Statistics in Law Enforcement (3 q.h.)

Basic statistical information procedures and operations relating to law enforcement. Interpretation of criminal statistics, crime rates, unrecognized crime, non-reporting, recidivism rates, individual statistics, evaluation of records, research and data on specialized services. *Prereq.* LEN 4327.

LEN 4302 Correctional Counseling (3 q.h.)

Basic concepts and principles of counseling, individual and group therapy carried on in the correctional field, and institutional services; case study and projects.

LEN 4303 Interviews and Interrogations 1 (3 q.h.)

Interviewing of victims, witnesses, informants, and complainants; demonstration, study, discussion, and practice of techniques and procedures.

LEN 4304 Interviews and Interrogations 2 (3 q.h.)

Techniques for legally acceptable questioning of suspects and persons in custody; laws governing interrogation practices; demonstrations, class exercises, and assigned projects. *Prereq.* LEN 4303.

LEN 4305 Advanced Correctional Practices 1 (3 q.h.)

Diagnosis and treatment of the drug addict and the alcoholic offender at both juvenile and adult levels; a study of these and related kinds of personal self-abuse as to causation and treatment.

LEN 4306 Advanced Correctional Practices 2 (3 q.h.)

Case studies of persons confined; their past and present environment; consideration of purposeful resolves or regressions. A study and evaluation of correction-

psychiatric facilities for the disordered offender, including the aggressive, the assaultive, and the violent subject. *Prereq.* LEN 4305.

LEN 4307 Law and Institutional Treatment (3 q.h.)

The process of law from arrest of offender through release in its relation to corrections; principles and practices; functions of police, defense, prosecution, and courts; legal documents related to commitment.

LEN 4308 Comparative Correctional Systems (3 q.h.)

A study of correctional systems and methods in selected jurisdictions; examination of organization, administration, and practices in the United States and foreign countries.

LEN 4309 Law Enforcement Identification and Records 1 (Criminal Histories System) (3 q.h.)

Records and systems utilization; survey of forms, files, procedures, and standards, with an introduction to the criminal histories systems concept and the applicability of C.O.R.I. (Criminal Offenders Record Information) in law enforcement record-keeping.

LEN 4310 Law Enforcement Identification and Records 2 (Criminal Histories System) (3 q.h.)

Theories and practices in personal identification principles; survey and evaluation of present and new identification techniques; introduction to public records, fair information practices, and exceptions in law enforcement. *Prereq.* LEN 4309.

LEN 4311 Research Methods in Criminal Justice (3 q.h.)

A research project related to some specific police or correctional interest or operation, in consultation with the faculty advisor. Course meets at discretion of the instructor. Project paper required for grade.

LEN 4312 Treatment of Offenders 1 (3 q.h.)

The concept of treatment and corrections; history; classification; training, education, and guidance; treatment methods; inmate society; health and social services.

LEN 4313 Treatment of Offenders 2 (3 q.h.)

Therapy, psychiatric and psychological considerations, case studies, evaluation of comparable methods. *Prereq.* LEN 4312.

LEN 4314 Police Supervision (3 q.h.)

The police supervisor's role in discipline, interdepartmental relations; problem handling and personnel policies; problems in supervisory relationships; wages, grievances, morale, and safety.

LEN 4315 Criminology 1 (3 q.h.)

An introduction to the study of crime from the perspective of classical and contemporary criminological theories. In particular, attention is given to biological, psychological, and sociological approaches to the explanation of crime.

LEN 4316 Criminology 2 (3 q.h.)

A continuation of LEN 4315, with emphasis on the causes of crime and the relation between law and crime. Specific implications of prevention, rehabilitation, and treatment are considered in depth. *Prereq.* LEN 4315.

LEN 4317 Probation and Parole Practices 1 (3 q.h.)

The probation officer; pre-sentence investigation; conditions of probation; effectiveness, administrative aspects, and prediction methods; relation to community.

LEN 4318 Probation and Parole Practices 2 (3 q.h.)

The parole officer; conditions of parole; supervision; effectiveness; administrative relationships; relations to the community, court, and law enforcement agencies; relations of probationer and parolee to rehabilitative, social, and family services; consideration of recidivism and aftercare. *Prereq.* LEN 4317.

LEN 4319 Law Enforcement Management and Planning 1 (3 q.h.)

Philosophy and theories of management in law enforcement; studies of organization from the administrator's viewpoint, including control, efficiency, effectiveness, and discipline.

LEN 4320 Law Enforcement Management and Planning 2 (3 q.h.)

A survey of the administrator's role, including special activities and responsibilities; administrative planning; civilian personnel, including recruitment, selection, evaluation; training; budgets; management records; interpersonal communications; auxiliary services, evaluation of present and future management systems. *Prereq.* LEN 4319.

LEN 4321 Document Control (3 q.h.)

A detailed study of procedures for handling and control of classified and other sensitive information; a survey of control systems from manual to semi-automated systems using data processing equipment.

LEN 4322 Physical Security 1 (3 q.h.)

The basic foundations for security in industry, banking, transportation, utilities, and other nongoverning operations; physical requirements and standards.

LEN 4323 Physical Security 2 (3 q.h.)

Implementation of security; study of inanimate aspects, including alarm and surveillance devices; study of animate aspects of protection. *Prereq.* LEN 4322.

LEN 4324 The National Law Enforcement Seminar (3 q.h.)

An annual, concentrated exploration of current viewpoints, varied solutions, innovative procedures, and critical analyses in the issues facing law enforcement, correctional practices, and security, drawing on exceptionally qualified local and national figures. A research paper under the direction of a faculty adviser is required for credit. (Not offered every year.)

LEN 4325 Seminar in Hospital Security (3 q.h.)

The function of protection in the health industry; medical security administration, including study of health care providers; trends in hospital law; security from injury, fire, and loss in the medical world; security methodology for safeguarding specialty areas; the security role in mass casualty management and emergency preparedness; the concept of professionalism; community liaison; and patient attitudes toward security.

LEN 4326 Law Enforcement Mathematics 1 (3 q.h.)

A review of elementary algebra: algebraic expressions and operations, equations, word problems; solutions to mathematical problems in their practical applications in the criminal justice field. Probability, trigonometry, statistics, ratio, and proportion.

LEN 4327 Law Enforcement Mathematics 2 (3 q.h.)

Further review: fundamental operations, measurement and computation, solutions of linear and quadratic equations. Equations of motion and energy, permutations, combinations. Application of these principles will be applied to most areas of law enforcement. *Prereq.* LEN 4326.

LEN 4328 Seminar in Law Enforcement (Youth Crime Control) (3 q.h.)

The criminality and deviance of those between the juvenile and adult age. Consideration is given to concepts and characteristics of the youthful offender, the role of the family in youth crime, the generation gap, violence of youth hooliganism, drug addiction of youth, ordinary crimes of youth, the youth subculture and culture conflict, the role of mass media and education in youth crime, the concepts of freedom and justice in the youth culture, treatment of youthful offenders, and the state of youth crime control in foreign countries.

LEN 4329 Seminar in Law Enforcement (International Crime Control) (3 q.h.)

Crimes touching upon more than one country, with emphasis on international criminal law principles, treason, and espionage. Concentration is given to the concept of law in its comparative aspects, customs, treaties, international conventions, "comity," culture conflicts, the "international personality," the "attempt clause," the Belgian approach, the Oxford approach, asylum and extradition, international ordinary criminals, political criminals, piracy (on sea and in the air), war criminals, genocide, international courts, League of Nations, United Nations international criminal statistics, Interpol, the Soviet-type spy-schools, the history of American intelligence.

LEN 4330 Seminar in Law Enforcement (Operational Intelligence) (3 q.h.)

Designed to provide the student with the opportunity to understand theoretically the value and function of an intelligence unit, including planning, directing, organizing, financing, and other salient features of the administration of these units. Emphasis is placed on

organized crime, subversive activities, and liaison programs as they apply to a modern police agency.

LEN 4331 Seminar in Law Enforcement (Collective Bargaining) (3 q.h.)

The history and background of collective bargaining in the public sector as it affects members of the law enforcement field; initial establishment of rights of labor, labor legislation—federal and state; preparation for negotiation, resolution of impasses, final agreement, and operation of the contract.

LEN 4332 Man, Law, and Society 1 (3 q.h.)

A general analysis of the ways in which major changes occur in the established practices of legal and social organizations and communities. Particular concern with the part played by legal institutions in initiating, controlling, and directing or assisting in such changes.

LEN 4333 Man, Law, and Society 2 (3 q.h.)

An introduction to the social science concepts and methods in their current and potential application to social and legal problems. Aims to acquaint the student with a variety of social research concepts and methods of special utility in investigating diverse types of social law-related problems. *Prereq.* LEN 4332.

LEN 4334 Seminar in Law Enforcement (Interviewing Practicum) (3 q.h.)

Advanced interrogation methods and procedures; techniques of persuasion; conditioning (negative and positive); the polygraph, its history and methodology; the established rules and procedures required for current diagnosis of truth and deception; the evaluation of the contemporary methods of international law enforcement agencies. *Prereq.* LEN 4304.

LEN 4335 Seminar in Law Enforcement (Organized Crime) (3 q.h.)

The nature and problems of organized crime; causes and effects; comparative and historic roots; the activities, organization, and economics; possible solutions; the scope and techniques in combating organized crime.

LEN 4336 Seminar in Law Enforcement (Minorities and the Urban Crisis) (3 q.h.)

An investigation of the ethnic and racial origins and characteristics of the American people; the interaction, conflicts, and possibilities of adjustment between the dominant society and minority groups, particularly in contemporary urban settings; the role and function of police in their relations with minority groups.

LEN 4337 Seminar in Law Enforcement (Prosecution Development) (3 q.h.)

Lecture and discussion relating to the professional requirements of the modern police officer in the United States, oral testimony, the entire *corpus delicti* and all other related matters in proper form and sequence, the trial, testimony and the jury, conduct on the witness

stand, opposition counsel, the defense of entrapment, opinion testimony, confessions, prospective witnesses, legal standards and the police.

LEN 4338 Seminar in Law Enforcement (Forensic Laboratory) (3 q.h.)

Crime laboratory organization and utilization of special equipment for the analysis, interpretation, classification, and identification of physical evidence obtained in crime scene searches. The transportation, storage, and security of physical evidence and the effect of the results, coupled with the preparation of exhibits for courtroom presentation. *Prereq.* LEN 4111.

LEN 4339 Seminar in Law Enforcement: Intervention Strategies and Tactics for Law Enforcement Counseling Techniques (3 q.h.)

Basic concepts and principles of intervention as a social work method. Nature of therapeutic relationships, principles of communication. Diagnostic assessment of the person-problem-situation configuration. Goal-setting process. Ego-supportive procedures and use of community resources.

LEN 4340 Civil Liberties and the Police 1 (3 q.h.)

An in-depth preparation for the officer facing the practical problems of enforcing the law without breaching the civil rights of the accused and bystanders; individual readings, lectures, group discussions, and preparations from Massachusetts and national interest cases; many incidents pertinent to the actions of the people involved with these problems will be investigated and studied; constitutional interpretation and limitations are the guidelines for the course.

LEN 4341 Civil Liberties and the Police 2 (3 q.h.)

Several Supreme Court cases are followed from the time of the call to the confrontation, arrest, examination in court, appeals, and the direct statements on the problem by jurists of the highest court. The last section of the term ties in the latest criminal law and Civil Rights Act changes including, but not limited to, criminal justice and no-knock laws and the latest Civil Rights Act. *Prereq.* LEN 4340.

LEN 4342 Seminar in Law Enforcement (Executive Development) (3 q.h.)

The role of the police administrator within the managerial structure. Special problems unique to the law enforcement executive, decision making, policy formation, planning, controlling, communicating, and directing. A consideration of case studies and surveys will be utilized.

LEN 4343 Seminar in Law Enforcement (Mental Health and the Police) (3 q.h.)

A study of the roles of law enforcement and mental health services. Diagnosis of the triggering mechanisms of behavioral disorders and the suicide phenomenon; psychiatric and psychological considerations; case studies and the legal process.

LEN 4344 Law Enforcement Fiscal Management (3 q.h.)

The various budgeting systems and their application to law enforcement organizations, including: the line-item budget, programmed budget, performance budget, and the planned programmed budget system; development of sound fiscal policy; appropriation of funds; tax base revenue systems; distribution of public monies; budget request, expenditures; and auditing procedures.

LEN 4345 Seminar in Law Enforcement (Grantsmanship) 1 (3 q.h.)

Designed to familiarize the participants with the orderly sequence of organizational steps required in providing the institutional framework necessary for preparation and submission of applications to granting agencies. Major topics include: Omnibus Crime Control and Safe Streets Act of 1968; grant application strategy, planning, and research.

LEN 4346 Seminar in Law Enforcement (Grantsmanship) 2 (3 q.h.)

A continuation of LEN 4345 with an emphasis on evaluation, monitoring, and auditing grant programs. Strategies for different types of grants (HUD, EDA, SBA, CDBG) and private foundations and other non-profit organizations. *Prereq.* LEN 4345.

LEN 4347 Human Behavioral Factors for Security Personnel 1 (3 q.h.)

This course is intended for those personnel in the security role who intend to eventually become supervisors and administrators. It is intended to give them some insights into such topics as individual differences, motivation, job satisfaction, and attitudes of employees.

LEN 4348 Human Behavioral Factors for Security Personnel 2 (3 q.h.)

The student will deal with interviews, evaluation of subordinates, some testing and personnel selection. It is expected that the student will have some knowledge of attitudes, morale, management, and leadership. This course will include some aspects of organizational development and relations with the general public. *Prereq.* LEN 4347.

LEN 4349 Human Behavioral Concepts and Tactics in Police Work 1 (3 q.h.)

Designed for police officers in all phases of police work, this course will focus on both the professional and personal life of the police officer. It is intended to cover practical and theoretical areas and to help the police officer deal with problems and issues both on the job and at home. Other topics will include: needs, drives, motivation, power and control of others, use of the gun, use of the uniform, "shoot to kill," use of vehicles, mixed patrols, supervision, unions, personality development, and discretion.

LEN 4350 Human Behavioral Concepts and Tactics in Police Work 2 (3 q.h.)

Designed to examine issues of stress, anxiety, heart attack, drugs, and alcohol, suicide, marriage, sexual inadequacy, sexual problems, and other factors that police officers face in their personal and professional life. *Prereq.* LEN 4349.

LEN 4351 Corporate Ethics and Crime for the Security Practitioner (3 q.h.)

The study of corporations when they engage in illegal behavior and practices and the failure of reporting these practices to the government. The course concentrates on incidents and types of unethical behavior of top management, highlighting the structural relationship and pressures in a large corporation in their conceptions of middle management's role when pressured to ignore safety violations, kickbacks and poor quality products.

LEN 4352 Interviews and Interrogations (Intensive) (6 q.h.)

Combination of LEN 4303 and LEN 4304.

LEN 4353 Law Enforcement Identification and Records (Intensive) (6 q.h.)

Combination of LEN 4309 and LEN 4310.

LEN 4354 Law Enforcement Management and Planning (Intensive) (6 q.h.)

Combination of LEN 4319 and LEN 4320.

LEN 4355 Criminology (Intensive) (6 q.h.)

Combination of LEN 4315 and LEN 4316.

LEN 4356 Treatment of Offenders (Intensive) (6 q.h.)

Combination of LEN 4312 and LEN 4313.

LEN 4357 Probation and Parole Practices (Intensive) (6 q.h.)

Combination of LEN 4317 and LEN 4318.

LEN 4358 Advanced Correctional Practices (Intensive) (6 q.h.)

Combination of LEN 4305 and LEN 4306.

LEN 4359 Law Enforcement Mathematics (Intensive) (6 q.h.)

Combination of LEN 4326 and LEN 4327.

LEN 4360 Man, Law and Society (Intensive) (6 q.h.)

Combination of LEN 4332 and LEN 4333.

LEN 4361 Physical Security (Intensive) (6 q.h.)

Combination of LEN 4322 and LEN 4323.

LEN 4362 Human Behavioral Factors for Security Personnel (Intensive) (6 q.h.)

Combination of LEN 4347 and LEN 4348.

LEN 4363 Human Behavioral Concepts and Tactics in Police Work (Intensive) (6 q.h.)

Combination of LEN 4349 and LEN 4350.

LEN 4364 Civil Liberties and the Police (Intensive) (6 q.h.)

LEN 4800 Directed Study (In-Car Seminar) (3 q.h.)

Independent research work in a selected criminal justice/law enforcement area, limited to qualified students, with the approval of the University College Law Enforcement Program Director and verification of participation in the In-Car Seminar project by the chief administrative officer or training director of the subscribing agency. *Prereq.* Participation in the In-Car Seminar Program and permission of the Law Enforcement Program Director of University College.

LEN 4801 Honors Program 1 (4 q.h.)

Prereq. Approval of the Dean.

LEN 4802 Honors Program 2 (4 q.h.)

Prereq. LEN 4801.

LEN 4803 Honors Program 3 (4 q.h.)

Prereq. LEN 4802.

LEN 4808 Independent Studies 1 (3 q.h.)

Faculty-guided research in individually selected topics relating to the criminal justice system.

LEN 4809 Independent Studies 2 (3 q.h.)

A continuation of faculty-guided research as described in LEN 4808. *Prereq.* LEN 4808.

LEN 4899 Field Work in Law Enforcement, Correctional Practices and Security (6 q.h.)

An opportunity for students to become familiar with practice in their major field. To be arranged with department consultant or major adviser prior to registration. *Prereq.* Major in Law Enforcement, Correctional Practices, or Security.

LIB 4302 Selection of Library Materials (3 q.h.)

Principles and practices in the selection of materials for the modern library, bibliographic aids to selection, practice in preparation of book notes and book reviews.

LIB 4310 Critical Research Tools (3 q.h.)

How to start on a research project. Opportunity to develop academic competence and efficiency via the mastery of basic reference materials. Covers the use of a wide variety of research tools to make the most effective use of available study time and to improve academic performance. How to get the most out of dictionaries, encyclopedias, almanacs, yearbooks, atlases, newspapers, periodicals, indices, reviews, biographical sources, print and non-print formats (e.g., microfiche, computer banks, film strips).

LIB 4312 Multi-Media Centers (3 q.h.)

Organization and management of elementary and secondary school libraries, problems in the selection and evaluation of multi-media materials necessary to the school curriculum.

LIB 4313 Administration of Multi-Media Centers (3 q.h.)

The library as a media center for instructional materials,

problems in personnel and budgeting, the library's role in curriculum, and services to students and faculty.

LIB 4314 Multi-Media Materials and Services (3 q.h.)

The selection, organization, and use of multi-media materials in school libraries; types of library equipment and services; cataloging of school library materials.

LIB 4321 Introduction to Reference Materials and Methods (3 q.h.)

The basic tools and methods for locating information. Evaluation of dictionaries, encyclopedias, gazetteers and atlases, handbooks, almanacs, directories, and indices.

LIB 4322 Reference Work in the Social Sciences (3 q.h.)

Scope and use of outstanding reference materials, including government publications, in the broad range of the social sciences: economics, education, political science, sociology, and allied fields. *Prereq. LIB 4321 or equiv.*

LIB 4323 Reference Work in the Humanities (3 q.h.)

Approaches to the solution of reference problems in the humanities, with special emphasis on literature. *Prereq. LIB 4321.*

LIB 4325 Business Research Tools (3 q.h.)

Assists the business student or professional in becoming familiar with and adept in the use of the most respected publications and information sources in the business community. Content relates to such areas as business law, accounting, finance, marketing, statistics, computers, and data bases. Students are given a series of reference assignments to learn where to go, and how to dig out and understand complex data for the answers. Helps students to develop an overall command of key business information tools.

LIB 4331 Descriptive Cataloging (3 q.h.)

Theory and practice of descriptive cataloging; introducing techniques of compiling author, corporate, and serial entries.

LIB 4332 Subject Headings and Classification (3 q.h.)

Introduction to Dewey Decimal Classification and Sears subject headings; further study of descriptive cataloging in book and non-book materials. *Prereq. LIB 4331 or equiv.*

LIB 4333 Library of Congress Classification (3 q.h.)

The significant differences between LC and Dewey. Notes on original cataloging and techniques of classification within the LC scheme. Exercises in the use of LC schedules and subject headings. *Prereq. LIB 4331 or equiv.*

LNA 4101 Elementary Arabic 1 (4 q.h.)

An introduction to Arabic and related aspects of Arabic culture through oral comprehension, speaking, reading, and some writing of the language.

LNA 4102 Elementary Arabic 2 (4 q.h.)

Continuation of LNA 4101 with practice in elementary conversation, reading, and writing. *Prereq. LNA 4101 or equiv.*

LNA 4103 Elementary Arabic 3 (4 q.h.)

Continuation of LNA 4102, building the basic skills necessary to perform in the language at an elementary level. *Prereq. LNA 4102 or equiv.*

LNF 4101 Elementary French 1 (4 q.h.)

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNF 4102 Elementary French 2 (4 q.h.)

Continuation of grammar study. Oral and written exercises. *Prereq. LNF 4101 or equiv.*

LNF 4103 Elementary French 3 (4 q.h.)

Reading of French prose of increasing difficulty, with written and oral exercises based on the materials read; practice in conversation. *Prereq. LNF 4102 or equiv.*

LNF 4104 Intermediate French 1 (4 q.h.)

A review of grammar, with practice in composition and conversation. *Prereq. LNF 4103 or equiv.*

LNF 4105 Intermediate French 2 (4 q.h.)

History of French civilization, with discussions and conversation. *Prereq. LNF 4104 or equiv.*

LNF 4106 Intermediate French 3 (4 q.h.)

Intensive reading of modern French prose, with conversational practice. *Prereq. LNF 4105 or equiv.*

LNF 4231 French Literature 1 (3 q.h.)

Origins of French literature, with readings from major works of the Middle Ages. *Prereq. LNF 4106 or equiv.*

LNF 4232 French Literature 2 (3 q.h.)

Selections from the Classical period in the seventeenth and eighteenth centuries. *Prereq. LNF 4231 or equiv.*

LNF 4233 French Literature 3 (3 q.h.)

Readings from major works of the nineteenth and twentieth centuries. *Prereq. LNF 4232 or equiv.*

LNF 4801 French Directed Study 1 (4 q.h.)

Directed Study Option: When a language course is needed for a degree but is not available on the regular schedule at appropriate intervals, arrangements can be made to take three directed studies for a total of 12 q.h. Course numbers for **French Directed Study 1, 2, 3** are **LNF 4801, LNF 4802, LNF 4803**; for Spanish, **LNS 4801, LNS 4802, LNS 4803**, and so forth. Petitions and procedural instructions are available in 204 Churchill Hall. *Allow at least 6 weeks to complete petition process. Prereq. 87 q.h.*

LNF 4802 French Directed Study 2 (4 q.h.)

See LNF 4801.

LNF 4803 French Directed Study 3 (4 q.h.)

See LNF 4801.

LNG 4101 Elementary German 1 (4 q.h.)

Essentials of grammar, practice in pronunciation, progressive acquisition of a basic vocabulary and idiomatic expressions.

LNG 4102 Elementary German 2 (4 q.h.)

More difficult points of grammar, particularly uses of subjunctive mood. *Prereq.* LNG 4101 or equiv.

LNG 4103 Elementary German 3 (4 q.h.)

Reading of simple German prose, with oral and written exercises based on material read; German conversation encouraged. *Prereq.* LNG 4102 or equiv.

LNG 4104 Intermediate German 1 (4 q.h.)

A review of grammar, with practice in composition and conversation. *Prereq.* LNG 4103 or equiv.

LNG 4105 Intermediate German 2 (4 q.h.)

History of German civilization, with discussions and conversation. *Prereq.* LNG 4104 or equiv.

LNG 4106 Intermediate German 3 (4 q.h.)

Intensive reading of modern German prose, with conversational practice. *Prereq.* LNG 4105 or equiv.

LNG 4801 German Directed Study 1 (4 q.h.)

See LNF 4801.

LNG 4802 German Directed Study 2 (4 q.h.)

See LNF 4801.

LNG 4803 German Directed Study 3 (4 q.h.)

See LNF 4801.

LNH 4101 Beginning Conversational Hebrew 1 (4 q.h.)

Stresses the acquisition of basic oral skills by introducing the essentials of Hebrew grammar with extensive practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNH 4102 Beginning Conversational Hebrew 2 (4 q.h.)

Continuation of LNH 4101 with introduction of Hebrew prose of moderate difficulty. *Prereq.* LNH 4101.

LNH 4103 Beginning Conversational Hebrew 3 (4 q.h.)

Continuation of LNH 4102. Continued stress on conversation, while building a solid core of basic Hebrew. *Prereq.* LNH 4102.

LNI 4101 Elementary Italian 1 (4 q.h.)

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNI 4102 Elementary Italian 2 (4 q.h.)

Continuation of grammar study. Oral and written exercises. *Prereq.* LNI 4101 or equiv.

LNI 4103 Elementary Italian 3 (4 q.h.)

Reading of Italian prose of increasing difficulty, with written and oral exercises based on the material read,

practice in conversation. *Prereq.* LNI 4102 or equiv.

LNI 4104 Intermediate Italian 1 (4 q.h.)

A review of grammar, with practice in composition and conversation. *Prereq.* LNI 4103 or equiv.

LNI 4105 Intermediate Italian 2 (4 q.h.)

History of Italian civilization, with discussions and conversation. *Prereq.* LNI 4104 or equiv.

LNI 4106 Intermediate Italian 3 (4 q.h.)

Intensive reading of modern Italian prose, with conversational practice. *Prereq.* LNI 4105 or equiv.

LNI 4801 Italian Directed Study 1 (4 q.h.)

See LNF 4801.

LNI 4802 Italian Directed Study 2 (4 q.h.)

See LNF 4801.

LNI 4803 Italian Directed Study 3 (4 q.h.)

See LNF 4801.

LNJ 4101 Elementary Japanese 1 (4 q.h.)

Designed specifically as an introduction to basic, practical Japanese, the course stresses the essentials of grammar, pronunciation, progressive acquisition of a core vocabulary and idiomatic, current expressions.

LNJ 4102 Elementary Japanese 2 (4 q.h.)

Continuation of LNJ 4101. Progressive acquisition of practical skills. *Prereq.* LNJ 4101 or equiv.

LNJ 4103 Elementary Japanese 3 (4 q.h.)

Continuation of LNJ 4102. *Prereq.* LNJ 4102.

LNJ 4104 Intermediate Japanese 1 (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* LNJ 4103 or equiv.

LNJ 4105 Intermediate Japanese 2 (4 q.h.)

Japanese history and civilization through texts of average difficulty, oral practice and composition based on covered materials. *Prereq.* LNJ 4104 or equiv.

LNJ 4106 Intermediate Japanese 3 (4 q.h.)

Continuation of LNJ 4105. *Prereq.* LNJ 4105 or equiv.

LNL 4101 Beginning Latin 1 (4 q.h.)

Stresses the grammatical acquisition necessary for reading elementary Latin prose, as well as understanding some basic etymologies. Recommended for those interested in enriching their knowledge of English and Romance languages, as well as those who wish to be able to read classical literature in the original.

LNL 4102 Beginning Latin 2 (4 q.h.)

Continuation of LNL 4101. *Prereq.* LNL 4101.

LNL 4103 Beginning Latin 3 (4 q.h.)

Continuation of LNL 4102. *Prereq.* LNL 4102.

LNN 4101 Beginning Conversational Swedish 1 (4 q.h.)

Stresses the acquisition of basic oral skills by introducing the essentials of Swedish grammar, with extensive

practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNN 4102 Beginning Conversational Swedish 2 (4 q.h.)

Continuation of LNN 4101, with introduction to Swedish prose of moderate difficulty. *Prereq.* LNN 4101 or *equiv.*

LNN 4103 Beginning Conversational Swedish 3 (4 q.h.)

Continuation of LNN 4102. *Prereq.* LNN 4102 or *equiv.*

LNN 4801 Directed Study 1 (4 q.h.)

See LNF 4801.

LNN 4802 Directed Study 2 (4 q.h.)

See LNF 4801.

LNN 4803 Directed Study 3 (4 q.h.)

See LNF 4801.

LNS 4101 Beginning Conversational Spanish 1 (4 q.h.)

Stresses the acquisition of basic oral skills by introducing the essentials of Spanish grammar with extensive practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNS 4102 Beginning Conversational Spanish 2 (4 q.h.)

Continuation of LNS 4101, with introduction of Spanish prose of moderate difficulty. *Prereq.* LNS 4101 or *equiv.*

LNS 4103 Beginning Conversational Spanish 3 (4 q.h.)

Continuation of LNS 4101 and LNS 4102. Continued stress on conversation, while building a solid core of basic Spanish. *Prereq.* LNS 4102 or *equiv.*

LNS 4104 Intermediate Spanish 1 (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* LNS 4103 or *equiv.*

LNS 4105 Intermediate Spanish 2 (4 q.h.)

Spanish civilization through texts of average difficulty. Intensive reading of modern prose, with occasional oral or written translation, conversation practice based on assigned readings. *Prereq.* LNS 4104.

LNS 4106 Intermediate Spanish 3 (4 q.h.)

Spanish-American civilization through texts of average difficulty. Intensive readings of modern prose, with occasional oral or written translation, conversation practice based on assigned readings. *Prereq.* LNS 4105 or *equiv.*

LNS 4110 Conversational Spanish for the Law Enforcement Professional (4 q.h.)

Intended for the law enforcement officer who is now, or will soon be working in the Hispanic community. The course will cover basic Spanish needed for interviewing a suspect, obtaining personal descriptions, reporting a

traffic accident, giving directions, receiving communications about robbery, fire, missing persons, and other situations common to police work. Elementary points of Spanish grammar will be presented.

LNS 4309 Spanish: The Generation of '98. The Great Flowering of Modern Spanish Letters (4 q.h.)

At the turn of the century, Spain passed through a crisis of national conscience. As the stature of Spain diminished, great writers of the day began to question their country's values. The result was a new literary flowering, a second golden age of Spanish literature. The course will examine this literary renaissance by presenting the works of Unamuno, Machado, Valle Inclán, Baroja, Azorín, Ortega y Gasset, and Pérez de Ayala. *Prereq.* 4 years of Spanish or *equiv.*

LNS 4801 Spanish Directed Study 1 (4 q.h.)

See LNF 4801.

LNS 4802 Spanish Directed Study 2 (4 q.h.)

See LNF 4801.

LNS 4803 Spanish Directed Study 3 (4 q.h.)

See LNF 4801.

MGT 4101 Introduction to Business and Management 1 (formerly Management and Organization 1) (3 q.h.)

Introduces the new businessperson to the setting and general structure of American business, which includes objectives and practices as they affect the American standard of living. Examines the characteristics of private enterprise and the nature and challenge of capitalism and other forms of economic enterprise. The student is introduced to the forms of business, both large and small; to the structures of organizations and the functions of management as they tend to influence the various forms of business. Provides the opportunity for understanding what a career on the management level of organizations involves, what problems must be faced, and what decisions must be reached.

MGT 4102 Introduction to Business and Management 2 (formerly Management and Organization 2) (3 q.h.)

Introduces the businessperson to methodologies in planning, organizing, directing, and controlling the functions of production, marketing, sales, and pricing as they relate to the American free enterprise system and in contrast to other systems of international business. Examines modern, effective, and proven tools and techniques for coping with the myriad interrelations and intricacies of systems management. Develops a more comprehensive understanding of the total structure of business and other enterprises. *Prereq.* MGT 4101.

MGT 4103 Introduction to Business and Management 3 (formerly Principles and Practices of Management) (3 q.h.)

Takes the student from definitions and fundamentals of business to basic concepts relating to the functions of management and to the analytical techniques that are

necessary to successful decision making. Emphasizes that management is a continuous process of action by introducing students to methods of designing an organization; understanding and dealing with people; evaluating the political, social, and economic environment; effectively planning, directing, and controlling the organization. Short cases and professional articles included in the text provide provocative material for discussion and reinforcement of management concepts. *Prereq.* MGT 4102.

MGT 4105 Introduction to Business and Management (Intensive) (formerly Management and Organization Intensive) (6 q.h.)

Combines MGT 4101 and MGT 4102.

MGT 4310 Project Planning and Control (3 q.h.)

Employs a systems approach to planning, scheduling, and controlling of large and small projects. The course is a combination of lectures and case studies that introduces and utilizes various tools and techniques, including bar charts, networks, critical path analysis, and an introduction to PERT. The course will assist the student in planning, scheduling, and allocating resources as a basis for controlling projects and comparing actual against planned performance. Students will gain experience through their active participation in the case studies. *Prereq.* MGT 4101.

MGT 4320 Managing Change (3 q.h.)

Applies managerial concepts and practices within policy or resource constraints to real-time operational situations. Recognizing that today's business manager must operate in an environment of accelerating change, the course considers current factual examples of changing situations and examines guidelines for their resolution. In addition, it explores the process by which the manager makes decisions dealing with the impact of change on the organization and its personnel. Utilizing actual problems confronting today's organizations, the student progressively investigates change stemming from actions of managers and other individual contributors at all levels of the organization. This investigation attempts to determine the sources of change and alternative courses of action. The course develops a conceptual framework for handling change in one's own business career. *Prereq.* MGT 4103.

MGT 4323 Motivation Management (3 q.h.)

Designed to help students to differentiate between management as a conferred or elective post, and leadership as a combination of personal traits or qualities, as well as to evaluate the impact of various styles of leadership or management on human behavior. Important concepts of motivation will be introduced and analyzed. Each student will have an opportunity to develop an understanding of the working environment containing a combination of these and other processes that influence both performance and outcome. The course work will be supported by readings from contemporary behav-

ioral scientists. Each student will undertake a research project and will report on it for group discussion and analysis. *Prereq.* MGT 4103.

MGT 4325 Entrepreneurship and Small Business Management 1 (3 q.h.)

An introduction to the major aspects of managing a small business. Areas probed cover basic elements of entrepreneurship and initial phases of planning, including legal, financial, marketing, control organization, and management functions. To provide realism, actual cases involving small businesses will be used with background text. *Prereq.* MGT 4101.

MGT 4326 Entrepreneurship and Small Business Management 2 (3 q.h.)

A follow-up to MGT 4325, intended for advanced business students. Emphasis will be placed on developing business plans, analyzing performance, problem identification, maintaining financial health, and planning for the future. Actual cases involving small businesses will be used in conjunction with background reading. *Prereq.* MGT 4325.

MGT 4327 Entrepreneurship and Small Business Management (Intensive) (6 q.h.)

Same as MGT 4325 and MGT 4326. (Not open to students who have taken those courses.) *Prereq.* MGT 4101.

MGT 4350 Business Policy 1 (formerly Management Decisions and Policies 1) (3 q.h.)

Organized as a capstone course for a business program, this course utilizes as its foundation all previous courses in management as well as numerous functional and process courses. It examines the total management process associated with the formulation and implementation of strategy for the entire enterprise, considering both management theory and practice. Deals with the development of corporate objectives, plans, and policies, with emphasis on the interaction between the enterprise and its environment. Both the economic and social responsibilities of business and managers are considered. *Prereq.* 100 q.h.

MGT 4351 Business Policy 2 (formerly Management Decisions and Policies 2) (3 q.h.)

The organizational and administrative functions for converting plans into corporate performance and achievements are considered. The concepts of strategic planning and implementation are explored from the perspective of the general manager; particular attention is given to examination and identification of the functions, responsibilities, styles, values, and organization relationships of enterprise top management. Cases are drawn from profit- and nonprofit-oriented enterprises of various sizes in diversified fields, operating within many different business environments, including international businesses. Students should plan to participate actively in class discussion of case studies. *Prereq.* MGT 4350.

MGT 4352 Business Policy (Intensive) (6 q.h.)

Combines MGT 4350 and MGT 4351. *Prereq.* 100 q.h.

MGT 4355 Manager and Society (3 q.h.)

A course designed for managers and staff persons, focusing on national and international issues surrounding corporate social responsibility of business and industrial enterprise in contemporary American society. *Prereq.* MGT 4350.

MGT 4356 International Business Management and Operations (3 q.h.)

Introduces the student to the principles and practices at work in international business. It provides a comparison of the differences between domestic and international business activities, responsibilities, and influences. Explores the impact on the traditional business, economic, social, political, and legal arenas caused by the need for businesses to operate in a multinational environment. Examines the differences in functional performance resulting from the influence of the "foreign" factor in the business equation. *Prereq.* MGT 4350.

MGT 4360 Management Seminar 1 (3 q.h.)

A broad interdisciplinary project utilizing one or more of the techniques of library research, field research, field surveys, and organizational audits. Students will have the opportunity to utilize the knowledge gained in earlier course work. *Prereq.* MGT 4351.

MGT 4361 Management Seminar 2 (3 q.h.)

A continuation of MGT 4360. *Prereq.* MGT 4360.

MGT 4362 Advanced Management Seminar (3 q.h.)

This special-enrollment seminar is normally a continuation of a specific group project conducted during MGT 4360 and MGT 4361, and is offered only during the Spring quarter. The specific group project must be of major management significance and may take the form of research of a management issue, a management audit, or an organizational analysis, usually of a real company. Enrollment in the seminar is limited, and both enrollment and the project must be approved by the Area Consultant and the Program Director. A written statement of the project, along with a listing of students to be enrolled, must be submitted to the Area Consultant no later than the fifth week of the Winter quarter for review and approval action. *Prereq.* MGT 4361.

MIS 4101 Introduction to Data Processing and Information Systems 1 (3 q.h.)

An introduction to computers. Topical coverage includes the history of data processing, numbering and coding systems, business data processing concepts, and computer hardware.

MIS 4102 Introduction to Data Processing and Information Systems 2 (3 q.h.)

A continuation of MIS 4101. Topical coverage includes a discussion and overview of the systems development life cycle, programming tools and program preparation,

introduction to COBOL/BASIC programming language concepts, use of computers in specific business applications, data communications, time sharing and data base principles. Students have an opportunity to learn to program in other courses. *Prereq.* MIS 4101.

MIS 4103 Introduction to Data Processing and Information Systems (Intensive) (6 q.h.)

Intensifies material of MIS 4101 and MIS 4102 into a single quarter by doubling frequency of class meetings and pace of nonclass work.

MIS 4220 Introduction to Programming in COBOL (formerly COBOL for Non-Programmers) (3 q.h.)

A one-quarter introductory computer programming course for business students. Fundamentals of computer programming are introduced along with COBOL (Common Business Oriented Language). The divisions of COBOL, data file structures, and verb actions are studied. Each student will prepare and check out several programs using the University Computer Center. *Prereq.* MIS 4102.

MIS 4221 COBOL Programming 1 (3 q.h.)

A beginning computer problem-solving and programming course using the COBOL language. Topical coverage includes structured flowcharting and programming techniques, use of an editor for program generation, input/output record layouts, and basic concepts of the COBOL programming language such as COBOL divisions and verbs. Students will have an opportunity to write and debug programs. *Prereq.* MIS 4102 or MIS 4103.

MIS 4222 COBOL Programming 2 (3 q.h.)

A continuation of MIS 4221. Topical coverage includes logic control breaks, creation of multi-page reports, sign and class tests (with redefines), and verification of input data. Students will have an opportunity to write and debug programs. *Prereq.* MIS 4221.

MIS 4223 COBOL Programming 3 (3 q.h.)

A continuation of MIS 4222. Topical coverage includes the following advanced techniques: the sort verb, use of subroutines, table handling, and data file processing. Students will have an opportunity to write and debug programs. *Prereq.* MIS 4222.

MIS 4225 COBOL Programming (Intensive) (9 q.h.)

An introduction to COBOL computer programming, intensified into one quarter. Covers the material in COBOL Programming 1, 2, and 3. Class meets two nights a week for three and one quarter hours each night. *Prereq.* MIS 4102.

MIS 4231 COBOL Programming (Intensive) A (6 q.h.)

Intensifies material of COBOL Programming 1 and 2 into a single quarter by meeting twice a week for two hours and ten minutes per session. The pace of computer programs written and debugged is also intensified. *Prereq.* MIS 4102.

MIS 4232 COBOL Programming (Intensive) B (6 q.h.)

Intensifies material of COBOL Programming 3 and Advanced COBOL Programming into a single quarter by meeting twice a week for two hours and ten minutes per session. The pace of computer programs written and debugged is also intensified. *Prereq.* MIS 4222 or MIS 4231.

MIS 4235 Advanced COBOL Programming (3 q.h.)

This one-quarter programming course is offered for the advanced COBOL programmer. Several kinds of programming disciplines will be presented. Programming techniques studied will include string and unstring, call subroutines, label handling with 1, 2, and 3 dimensions, indexed sequential access methods (SAM) for file processing, debug, communications, and copy library. *Prereq.* MIS 4223.

MIS 4240 Introduction to Programming in BASIC (3 q.h.)

A stand-alone, one-quarter introduction to computer programming using BASIC (Beginners All-purpose Symbolic Instruction Code). BASIC is the computer programming language used to a great extent in mini-computers or personal computers. It is the computer language used in small businesses, or it can be studied as a hobby. Students will write and execute a number of problems using the terminals attached to the University Computer Center. *Prereq.* MIS 4102.

MIS 4241 Programming in BASIC 1 (3 q.h.)

Introduction to computer programming using BASIC (Beginners All-purpose Symbolic Instruction Code). The student will learn to use all of the more general purpose instructions. Students will write, compile, test, and debug a number of programs using the University Computer System. *Prereq.* MIS 4102.

MIS 4242 Programming in BASIC 2 (3 q.h.)

A continuation of MIS 4241, covering more sophisticated computer programming. Techniques are applied to the solution of more complex application problems. BASIC subroutines are studied and file processing problems are presented. Meetings are divided into lectures and problem-solving sessions. *Prereq.* MIS 4241.

MIS 4250 FORTRAN Programming 1 (3 q.h.)

Designed to give the student the opportunity to gain a working knowledge of FORTRAN, the modern problem-oriented computer language. Enables the professional to understand the use of a computer in solving problems in business, mathematics, and the social and physical sciences through an introduction to problems in selected applications and use of FORTRAN in finding solutions. *Prereq.* MIS 4102.

MIS 4251 FORTRAN Programming 2 (3 q.h.)

Helps provide the student with practical experience in the use of FORTRAN in solving significant problems in

business, mathematics, and the social and physical sciences. Problems of sufficient complexity are used to allow the student to participate actively in the various steps necessary to analyze, define, document, and solve the problem using FORTRAN. *Prereq.* MIS 4250.

MIS 4252 FORTRAN Programming 3 (3 q.h.)

A sophisticated set of problems is presented to teams of students for solution. Consultations with the instructor allow students to participate actively in solving problems with the use of FORTRAN. *Prereq.* MIS 4251.

MIS 4253 FORTRAN Programming (Intensive) (9 q.h.)

Intensifies material of MIS 4250, MIS 4251, and MIS 4252 into a single quarter by meeting twice a week for three and one-quarter hours per session. The pace of nonclass work is also intensified. *Prereq.* MIS 4102.

MIS 4260 Assembly Programming 1 (3 q.h.)

Introduction to assembler language programming, using the University's computing system. The representation of instructions and data using binary numbering concepts will be introduced. Looping, instruction modification, indexing, indirect addressing, and data retrieval are introduced. cursory survey of assembler languages in general. *Prereq.* Demonstrated familiarity with any currently available computer language.

MIS 4261 Assembly Programming 2 (3 q.h.)

Further exploration of assembler language techniques, other addressing structures, floating point techniques, coding, and use of macro instructions. Includes input-output routines, use of operating systems for job scheduling resource allocation, and file handling. Business problems are analyzed, flowcharted, programmed, and debugged on the University's computer by students. Includes debugging of problems by core dump analysis. *Prereq.* MIS 4260.

MIS 4262 Assembly Programming 3 (3 q.h.)

Utilization of business data processing hardware on the University's computing system. Further use of operating system, divide independent file handling. Blocked and unblocked file manipulation. Application of assembler language to a sophisticated programming project. *Prereq.* MIS 4261.

MIS 4270 PASCAL Programming 1 (3 q.h.)

An introductory course in computer programming using the language PASCAL, which is particularly popular in the educational and microprocessor communities. Students will write, debug, and execute a number of individual and class projects using the University Computer Center. *Prereq.* MIS 4102.

MIS 4271 PASCAL Programming 2 (3 q.h.)

A continuation of MIS 4270, covering more sophisticated computer programming. Techniques are applied to the solution of more complex problems. *Prereq.* MIS 4270.

MIS 4275 RPG Programming (3 q.h.)

Course presents a working knowledge of the Report Program Generation language. This language is suited to small-scale computer usage for such tasks as report generations, file updating, various utility functions. Students write and debug class problems using a computer available to the student. *Prereq. MIS 4102.*

MIS 4276 Programming in C (3 q.h.)

Course is an introduction to programming in C, a programming language originally developed at Bell Laboratories and most notably associated with the UNIX operating system. Although C is a programming language that was first used for the development of systems programs and engineering applications it is now being used in the much broader area of business and data processing particularly to develop highly efficient applications for small personal and professional computer systems. Students will learn how to write programs in the C language, and solve a number of specific problems using the University's computer system. Must have knowledge of programming in at least one other programming language.

MIS 4280 Computer Operating Systems 1 (3 q.h.)

This course is for the student and user of data processing equipment who is also interested in the development, evaluation, and use of systems programs. The full range of features available in a variety of computer operating systems is analyzed in terms of structure and form. Various operating systems implementation techniques employed by different computer manufacturers are compared and presented, with emphasis upon their value as tools for application program development. Most references will be to IBM operating systems, but discussions will also refer to other computer manufacturers, including Digital Equipment Corporation, Data General and a variety of personal computer manufacturers. *Prereq. MIS 4220 or MIS 4221.*

MIS 4281 Computer Operating Systems 2 (3 q.h.)

Building on concepts and techniques presented in MIS 4280, this course will introduce students to distributed systems and networking software, a variety of data base systems and the UNIX operating system. Included will be discussions of local and wide area networking systems, and operating systems features made available to facilitate their application development. Data management as an operating systems feature will also be expanded to include data base systems available from a variety of computer manufacturers and software suppliers. The UNIX operating system and the features it makes available for program development will also be explored. This will include a study of its command language, its file and directory handling capabilities, its text manipulation capabilities and the UNIX shell. *Prereq. MIS 4280.*

MIS 4301 Systems Analysis and Design 1 (3 q.h.)

An overview of the systems analysis and design cycle. Coverage includes a history of the business information

systems analyst, the capture of data generated by business transactions, and an introduction to information systems tools such as data coding, forms design, flow-charting, and decision tables. *Prereq. MIS 4102.*

MIS 4302 Systems Analysis and Design 2 (3 q.h.)

An in-depth study of the first stages of the systems analysis and design cycle. Coverage includes systems investigation, determination of requirements, feasibility studies, and systems design. *Prereq. MIS 4301.*

MIS 4303 Systems Analysis and Design 3 (3 q.h.)

Continuation of an in-depth study of the systems analysis and design cycle. Topics include systems development and programming, implementation, operation, evaluation, and maintenance. Course concludes with a brief overview of current directions in hardware and software development. *Prereq. MIS 4302.*

MIS 4304 Systems Analysis and Design 4 (3 q.h.)

Covers the advanced information systems topics of data communications and distributed data processing. The subject is approached from the point of view of the user rather than the designer. Topics include the economics of distributed processing, communications concepts, and local area networks. *Prereq. MIS 4303.*

MIS 4305 Systems Analysis and Design (Intensive) 1 (6 q.h.)

Same as MIS 4301 and MIS 4302. (Not open to students who have taken those courses.)

MIS 4306 Systems Analysis and Design (Intensive) 2 (6 q.h.)

Same as MIS 4303 and MIS 4304. Not open to students who have taken those courses. *Prereq. MIS 4302 or MIS 4305.*

MIS 4310 Data Systems Administration (3 q.h.)

Course discusses the planning, control, and evaluation of business information systems from the point of view of the top-level information systems administrator. Included are a consideration of the positioning of the information systems function within the firm, the structuring of the function, and manpower and facilities planning. *Prereq. MIS 4102.*

MIS 4311 Business Data Processing Applications 1 (3 q.h.)

Presents the application of systems analysis and design principles to a number of important business functions. Systems discussed include accounts payable, accounts receivable, payroll, order entry, inventory control, and sales reporting and forecasting. *Prereq. MIS 4310.*

MIS 4312 Business Data Processing Applications 2 (3 q.h.)

A continuation of MIS 4311, covering additional information systems of accounts receivable, sales analysis, the design of integrated systems, a review of on-line systems, and computer system simulation. The oppor-

tunity to participate in a computer simulation exercise is offered during a field trip. A team case study project completes the quarter. *Prereq. MIS 4311.*

MIS 4340 Mini-Computers in Business 1 (3 q.h.)

Applicable to non-MIS business majors, as well as students with a Systems or EDP focus. Topics covered include: analysis of cost/performance; systems consideration of minis vs. alternatives; role of minis in a variety of applications, such as time sharing, intelligent terminals, data entry and gathering, data communications. Emphasis is placed on evaluation of minis as cost-effective elements of a business system. *Prereq. MIS 4220 or MIS 4221.*

MIS 4341 Mini-Computers in Business 2 (3 q.h.)

Development of system specifications, functional configurations, systems tradeoffs, site preparation, and maintenance considerations. Detailed analysis of systems with specific case studies related to business applications. *Prereq. MIS 4340.*

MIS 4345 Data-Base Systems (3 q.h.)

An introduction to data-base approach to the design of integrated information applications. Data-base design, data structures, diagramming, CODASYL, data definition language, data manipulation language, data base implementation and evaluation. *Prereq. MIS 4222 and MIS 4302.*

MIS 4350 Auditing Data Processing (3 q.h.)

Develops and discusses audit techniques, specifically toward EDP systems, programming, and operations. Emphasis on EDP standard practices, procedures, documentation, and safety and security. Defines EDP business risks and related exposures, e.g., fraud, embezzlement, misuse or destruction of company assets, or business interruption. Discusses EDP portion of accounting requirements of the Foreign Corrupt Practices Act of 1977. Course content is oriented toward EDP managers, internal auditors, and public accountants. Useful to the auditor, because it defines EDP specific audit techniques and is correspondingly useful to the EDP manager regarding what to expect when receiving a comprehensive audit. *Prereq. MIS 4102.*

MIS 4355 Information Processing in Medicine (3 q.h.)

A nontechnical survey of the impact and potential of computers in medicine: medical records, clinical reporting systems, automated laboratories, on-line monitoring, research needs, medical administration requirements. Analysis of the content and interactions of medical information subsystems. Implications of computerization of various medical activities, equipment selection, organizational considerations. *Prereq. MIS 4102.*

MIS 4360 Computer Privacy and Security (3 q.h.)

A comprehensive review of the real threats posed by modern electronic computers, as well as threats to computers and their users. Includes a review of the privacy issue as well as security approaches, techniques, and

tools used to safeguard computers. Uses actual case studies of computer abuse. *Prereq. MIS 4102.*

MIS 4365 Structured Analysis and Design Methods (3 q.h.)

Examines and illustrates the methods of structured systems analysis and design. Topics include topdown design, data-flows, decision logic documentations, structured English, structured walk-throughs, and the use of the data dictionary as a documentation tool. Students learn by applying the methods to sample business problems and case studies. *Prereq. MIS 4303.*

MIS 4380 Senior Seminar 1 (3 q.h.)

The student pursues a project on an approved topic tailored to meet individual needs in a particular area of MIS/EDP, under the supervision of a faculty member.

MIS 4381 Senior Seminar 2 (3 q.h.)

A continuation of MIS 4380. *Prereq. MIS 4380.*

MKT 4301 Introduction to Marketing 1 (3 q.h.)

Consideration is given to the planning of efforts necessary to the effective marketing of consumer and industrial products and services in both profit and nonprofit organizations. Coverage includes introduction to product, pricing, promotion, and distribution planning.

MKT 4302 Introduction to Marketing 2 (3 q.h.)

Continuation of MKT 4301, with emphasis on applications of marketing theories and concepts. Case studies of actual marketing problems are used. *Prereq. MKT 4301.*

MKT 4304 Introduction to Marketing (Intensive) (6 q.h.)

One-quarter course covering the material in MKT 4301 and MKT 4302.

MKT 4310 Advertising and Sales Promotion Management 1 (3 q.h.)

Detailed examination of the use of advertising and sales promotion techniques as communications elements within a marketing strategy. *Prereq. MKT 4302.*

MKT 4311 Advertising and Sales Promotion Management 2 (3 q.h.)

Continuation of MKT 4310. Case studies and projects are used to provide training in the development of creative advertising and promotion strategies and in the use of various communications media such as television, radio, and print. *Prereq. MKT 4310.*

MKT 4312 Advertising and Sales Promotion (Intensive) (6 q.h.)

One-quarter course covering the same material found in MKT 4310 and MKT 4311. *Prereq. MKT 4302.*

MKT 4315 Sales Management 1 (3 q.h.)

Detailed examination of the use of the sales force as an element of marketing strategy. Selection, training, development, organization, and supervision of the sales force. *Prereq. MKT 4302.*

MKT 4316 Sales Management 2 (3 q.h.)

Continuation of MKT 4315, with emphasis on the supervision and evaluation of the sales force. Also, role of personal selling within various marketing programs. Case studies used extensively. *Prereq.* MKT 4315.

MKT 4317 Sales Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in MKT 4315 and MKT 4316. *Prereq.* MKT 4302.

MKT 4320 Marketing Management 1 (3 q.h.)

An advanced case method course designed to develop the student's ability to analyze and make decisions about business problems that involve the creation, distribution, and sale of goods and services. Provides information on how to establish and control marketing budgets. Emphasis on demand analysis and the development of product pricing, promotion, and distribution policies. *Prereq.* MKT 4302.

MKT 4321 Marketing Management 2 (3 q.h.)

A continuation of MKT 4320, with emphasis on the implementation of marketing strategy. Emphasis is placed on the development of integrated marketing programs and the role of the marketing manager. *Prereq.* MKT 4320.

MKT 4322 Marketing Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in MKT 4320 and MKT 4321. *Prereq.* MKT 4301.

MKT 4330 Marketing Research 1 (3 q.h.)

The use of marketing research as a tool in planning, controlling, and evaluating marketing activities, including an introduction to the application of behavioral and quantitative concepts in the making of marketing decisions and the management of marketing programs. *Prereq.* MKT 4302.

MKT 4331 Marketing Research 2 (3 q.h.)

Techniques of data collection and analysis in marketing research, forecasting, product planning, sales control, test marketing, marketing evaluation, and marketing information systems. *Prereq.* MKT 4330.

MKT 4335 Public Relations 1 (3 q.h.)

An introduction to and overview of the basic principles, purposes, and methods of public relations in both profit and nonprofit organizations. Also includes discussion of community relations and employee relations.

MKT 4336 Public Relations 2 (3 q.h.)

Continuation of MKT 4335. Specific training in the development of public relations programs and the overall management of the public relations function in an organization. *Prereq.* MKT 4335.

MKT 4337 Introduction to Advertising (3 q.h.)

Especially for the nonmarketing (including nonbusiness) concentrator, although marketing concentrators may take the course. Focuses on advertising as a business tool as well as a force in society.

MKT 4340 Retail Management 1 (3 q.h.)

Detailed examination of the concepts and techniques of store operations and merchandise management. Focuses on the activities and contributions of the various retailing institutions: independents and chains, dealerships, specialty stores, fashion stores, department stores, supermarkets, discount stores, franchises, etc. Topics include retail management, retail profit and loss, starting a retail business, store location, store planning, and the retail organization. *Prereq.* MKT 4302.

MKT 4341 Retail Management 2 (3 q.h.)

Continuation of MKT 4340, with stress upon store operations, merchandising planning and control, merchandise management, pricing, buying, sales promotion, customer service, retail accounting, and expense management. *Prereq.* MKT 4340.

MKT 4342 Retail Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in MKT 4340 and MKT 4341. *Prereq.* MKT 4302.

MKT 4350 Consumer Behavior (3 q.h.)

Concerned with consumer attitudes and behavior processes as the basis of the design of marketing programs. Consideration is given to economic and behavioral models of consumer behavior and underlying behavioral theories and concepts. *Prereq.* MKT 4302.

MKT 4352 Professional Selling Skills (Intensive) (6 q.h.)

Provides an opportunity to develop the skills necessary for effective selling. Examines the customer buying process and the steps in a company's sales process. Discusses prospecting, preparation, presentation, and postsale activities. Introduces advanced selling techniques such as team selling. Focuses upon situations where personal selling is a major element of marketing strategy, such as in industrial product, professional service, and high-technology marketing. *Prereq.* MKT 4302.

MKT 4355 High-Technology Marketing (3 q.h.)

Focuses on the role of the company's marketing function in transforming technology into products. Discusses planning for product innovation, linkages between marketing and engineering, and communications strategies for marketing high-technology products. *Prereq.* MKT 4302.

MKT 4358 Marketing and Sales Seminar (3 q.h.)

Capstone marketing elective, focusing on the formulation and implementation of overall marketing strategy. *Prereq.* MKT 4331.

MLS 4301 Medical Laboratory Science Orientation (2 q.h.)

Scope, responsibilities, opportunities, and educational requirements for the medical laboratory science professions.

MLS 4321 Hematology (1 cl., 3 lab., 3 q.h.)

Basic hematological techniques, including discussion of the differential smear and observation of the normal morphology of human red cells, white cells, and platelets. *Prereq.* BIO 4104 or equiv. (*Not for Medical Technology or Hematology majors.*) (Laboratory fee)

MLS 4322 Morphologic Hematology 1 (1 cl., 3 lab., 3 q.h.)

Morphological and etiologic classification of the anemias. Related diagnostic tests will be discussed. *Prereq.* HMG 4425 or equiv. (Laboratory fee)

MLS 4323 Morphologic Hematology 2 (1 cl., 3 lab., 3 q.h.)

Studies of pathologic and physiologic deviations of the white cells series as observed in leukemias and infections. Some animal hematology is included. *Prereq.* MLS 4322 or equiv. (Laboratory fee)

MLS 4341 Epidemiology 1 (3 q.h.)

Basic concepts in epidemiology, the distribution in determinants of diseases and injuries in human populations. Descriptive and analytical epidemiology studies will be included.

MLS 4342 Epidemiology 2 (3 q.h.)

Study of the microbiological distributions in determinants of infectious diseases; hospital epidemiology.

MLS 4352 Basic MLS Electronics and Instrumentation (2 q.h.)

A course in electricity with coverage through introductory electronic circuits. Emphasis directed to medical laboratory instrumentation and related electrical processes of measurement.

MLS 4365 Quality Control (3 q.h.)

The development of quality control programs in each medical laboratory specialty. Applications of statistical methods to medical laboratory quality control programs.

MLS 4381 Seminar in Medical Technology (3 q.h.)

Current topics in medical technology. Required readings and presentations by students. Guest lectures. *Prereq.* Permission of instructor.

MS 4330 Introduction to Operations Research (3 q.h.)

An introductory course in modern quantitative management techniques. Students have an opportunity to learn theory and use of linear programming methods as an aid in becoming rational and logical decision-makers. Topics include graphical methods, simplex method, sensitivity analysis, duality, and computer implementations. *Prereq.* ECN 4250 or equiv.

MS 4331 Operations Research Applications (3 q.h.)

A companion course to MS 4330, this course covers additional quantitative problem-solving techniques essential to the modern decision-maker. Topics include decision theory, decision trees, utility theory, transportation models, queuing theory, and simulation. *Prereq.* MS 4330.

MS 4332 Statistical Quality Control (3 q.h.)

A practical course providing fundamental training in modern quality controls analytical methods. Emphasis is on the application of basic statistical controls in the industrial environment. Topics include control charts, statistical tolerancing, acceptance sampling techniques, life testing and reliability concepts. *Prereq.* ECN 4251.

MS 4333 Management of Quality Control (3 q.h.)

A comprehensive study of modern quality control management practices. Text material is supplemented by lively classroom discussion of different approaches to optimizing quality. Topics include organizational strategies, economics of quality, internal quality, external quality, and management of long-term quality/reliability. *Prereq.* MS 4332.

MS 4334 Advanced Quality Control (3 q.h.)

A seminar-based class providing students with an opportunity for in-depth study of several quality control topics of current interest. Typical subjects include Asian quality methods, advanced process capability techniques, use of computers in quality, and integration of quality and reliability programs. *Prereq.* MS 4333.

MS 4335 Principles of Material Inspection (3 q.h.)

Bridging the gap between manufacturing and data analysis, course focuses on the measuring process. In-class labs provide students with an opportunity for hands-on training on a wide variety of mechanical measuring devices. Lectures demonstrate the fundamental measuring principles involved, and illustrate how they can be extended to all measuring processes.

MS 4336 Industrial Experimentation (3 q.h.)

Course focuses on practical techniques for data collection that can greatly extend students' problem-solving skills. Students are instructed how to extract maximum information from small samples as well as how to avoid many of the common data-analysis pitfalls. Topics include randomized tests, multi-level tests, two-level multi-factor tests, and fractional factorial tests. *Prereq.* ECN 4251 or equiv.

MS 4337 Principles of Quality Assurance (3 q.h.)

Course surveys the modern quality function from its beginnings in product design, and continuing with vendor selection, incoming inspection, monitoring the manufacturing process, final product testing, and customer acceptance. Topics include defining quality, quality organization, sampling plans, control charts, and quality assurance reporting.

MTH 4001 Basic Mathematics 1 (3 q.h.)

Review of elementary algebra: algebraic expressions and operations, equations, word problems. *Note: Credit cannot be used in Lincoln College degree programs.*

MTH 4002 Basic Mathematics 2 (3 q.h.)

Further review: operations with polynomials, factoring, fractional expressions, word problems. *Note: Credit cannot be used in Lincoln College Degree programs.* *Prereq.* MTH 4001.

MTH 4081* Introduction to Mathematics 1 (4 cl., 4 q.h.)

This credit cannot be used in the Associate in Engineering, Associate in Science, or the Bachelor of Engineering Technology degree programs. A comprehensive review of high school algebra, including: first-degree equations, factoring, fractions, fractional equations, ratio and proportion, word problems, and concepts of plane geometry.

MTH 4082* Introduction to Mathematics 2 (4 cl., 4 q.h.)

This credit cannot be used in the Associate in Engineering, Associate in Science, or the Bachelor of Engineering Technology degree programs. Algebraic operations with complex fractions, mixed expressions, square roots, radicals, quadratic equations, simultaneous equations, graphs, and fractional zero and negative exponents; the geometry of the right triangle, areas of polygons and circles, and loci problems. *Prereq. MTH 4081*.*

MTH 4083* Applied Mathematics and Statistics (3 q.h.)

The use of mathematics as a guide to concise thinking; the application of mathematical methods to highlight significant data. The use of elementary analytical models to test and evaluate hypotheses. An examination of the role of change in physical phenomena. The importance of the use of a relevant statistical model. Methods for the selection of a data base. *Prereq. MTH 4082* or equiv.*

MTH 4107* College Algebra 1 (4 cl., 4 q.h.)

Fundamental algebraic operations; complex numbers; radicals and exponents; functions; linear and quadratic equations; irrational equations; inequalities; variation; roots of polynomial equations. *Prereq. Math Placement Test or MTH 4082*.*

MTH 4108* Introduction to Calculus (4 cl., 4 q.h.)

Logarithms; trigonometric functions of angles in degrees and radians; trigonometric identities and equations; right triangles; oblique triangles; complex numbers in trigonometric form; systems of equations; determinants. *Prereq. MTH 4107* or MTH 1107.*

MTH 4110 Mathematics 1 (3 q.h.)

The real number system, exponents, polynomials, factoring, radicals, algebraic fractions, complex fractions, linear equations, word problems. *Prereq. One year of high school algebra or its equiv. Note: a placement test will be given during the first class meeting. Students obtaining an unsatisfactory score on this test will be advised to enroll in MTH 4001 for additional preparation before attempting this course.*

MTH 4111 Mathematics 2 (3 q.h.)

Linear inequalities, letter equations, quadratic equations, and related problems. Graphs and functions, systems of equations. *Prereq. MTH 4110.*

MTH 4112 Mathematics 3 (3 q.h.)

Exponential and logarithmic functions, sequences, and series. Introduction to calculus. *Prereq. MTH 4111.*

MTH 4113 Mathematics (Intensive) (9 q.h.)

A combination of MTH 4110, MTH 4111, and MTH 4112.

MTH 4116* Probability and Statistics 1 (2 cl., 2 q.h.)

(Appropriate for both engineering and non-engineering students.) Basic tools, e.g., sets, permutations and combinations; probability and its applications; discrete and continuous random variables. *Prereq. MTH 4108* or MTH 1108.*

MTH 4117* Probability and Statistics 2 (2 cl., 2 q.h.)

Frequency distributions and probability density functions, binomial, normal, and other distributions; central limit theorem; hypothesis testing; analysis of variance; correlation; statistical inference and estimation. Examples taken from many different fields. *Prereq. MTH 4116* or MTH 1116.*

MTH 4118* Probability and Statistics 3 (2 cl., 2 q.h.)

Contingency tables; simple linear regression; multiple regression; model building. *Prereq. MTH 4117*.*

MTH 4120* Calculus 1 (4 cl., 4 q.h.)

Plane analytic geometry; differentiation of algebraic functions; rate, motion, maximum and minimum problems; deviations of higher order; curve sketching; basics in functions, limits, and continuity. *Prereq. MTH 4108* or MTH 1108.*

MTH 4121* Calculus—A (4 cl., 4 q.h.)

Applications of derivatives to curvesketching; antidifferentiation; the definite integral, with applications; calculus of nonalgebraic functions—logarithmic, exponential, and trigonometric; calculus of inverse trigonometric functions; techniques of integration; indeterminate forms; L'Hospital's rule. *Prereq. MTH 4120* or MTH 1140.*

MTH 4130 Calculus for Nonengineers 1 (3 q.h.)

An introductory calculus course for students in arts and sciences, business administration, and other nonengineering curricula. Fundamentals of differential calculus, rules of differentiation, rates of change, graph sketching, growth and decay function. *Prereq. MTH 4112 or equiv.*

MTH 4131 Calculus for Nonengineers 2 (3 q.h.)

Applications of differential calculus, including problems in optimization, velocity and acceleration, compound interest, population growth, and fitting equations to data. Introduction to integral calculus, areas, average values of functions, marginal and profit, depreciation. *Prereq. MTH 4130.*

*This is a Lincoln College course, offered at a different tuition rate from University College courses.

MTH 4132 Calculus for Nonengineers 3 (3 q.h.)

Calculus of trigonometric functions, techniques of integration, numerical methods, differential equations. Applications include pricing, allocation of funds, present value of an investment, manufacturing efficiency, and product reliability. *Prereq.* MTH 4131.

MTH 4140 Mathematics for Business Management 1 (3 q.h.)

Topics of mathematics applicable to business management. Linear equations and inequalities, matrix algebra, linear programming, sets, and counting techniques. *Prereq.* MTH 4112 or equiv.

MTH 4141 Mathematics for Business Management 2 (3 q.h.)

Business applications of probability, decision theory, Markov chains, game theory, and competitive analysis. *Prereq.* MTH 4140.

MTH 4142 Mathematics for Business Management 3 (3 q.h.)

Topics in statistics, mathematics of finance, communication models using directed graphs, logic. *Prereq.* MTH 4141.

MTH 4143 Mathematics for Business Management (Intensive) (6 q.h.)

A combination of MTH 4140 and MTH 4141.

MUS 4100 Introduction to Music (3 q.h.)

Introduction to selected works of our musical heritage from earliest times to contemporary styles. Primarily a survey and listening course, with emphasis on styles, basic theory, forms, and the historical, social, and artistic periods these works represent.

MUS 4103 Music as a Means of Social Expression (3 q.h.)

Examines the artist's involvement with the recurring social themes of human self-image, the search for peace and understanding, minority groups, and sexual relationships. Paintings and literary works are used, in addition to works by Beethoven, Schoenberg, Britten, and jazz composers.

MUS 4105 Music U.S.A. (3 q.h.)

American music from Puritan psalm singing to the present. Folk music of ethnic origin, concert music, ragtime, jazz, and contemporary styles are discussed.

MUS 4106 Women in Music (3 q.h.)

In-depth study of the historical role of women in music: as composer, performer, patron, inspiration.

MUS 4110 Music in Popular Culture (3 q.h.)

Investigates the attitudes of American civilization toward culture, art, and beauty through a look at contemporary popular music. Compares the different styles of pop music (jazz, rock, MOR, R&B) and traces their evolution. Examines the manipulation of public tastes by large corporations for commercial purposes.

MUS 4111 Rock Music (3 q.h.)

This course focuses on the history of rock music from its origins in American blues and other styles through the popular music of the 1950s, the political styles of the 1960s, and the diverse trends of the 1970s. Major emphasis is placed on the formative years of rock. Students may be required to attend rock performance in the Boston area.

MUS 4112 Jazz: Evolution and Essence (3 q.h.)

Jazz from its origins in New Orleans to the *avant-garde* experiments of today. The rhythmic, harmonic, instrumental, and stylistic characteristics of jazz are analyzed. Attention is given to the works of creative jazz artists, such as Armstrong, Beiderbecke, Parker, Ellington, and Coltrane.

MUS 4120 History of Musical Styles (3 q.h.)

A course for non-music majors. A survey of the historical trends in music from ancient times to the present. Individuals, ideas, and events that have influenced change in musical style will be highlighted. The course is designed to provide a broad overview of musical literature and history, and to enhance students' understanding and future concert attendance.

MUS 4121 Medieval and Renaissance Music (3 q.h.)

The course examines the development of sacred and secular monophony, vocal and instrumental works, and polyphonic music from their beginnings to about 1600.

MUS 4122 Music of the Baroque (3 q.h.)

The course focuses on the period of the emergence of the orchestra, the chorus, and the virtuoso performer; the development of the oratorio, opera, concerto, and symphony in the works of such composers as Monteverdi, Corelli, Handel, Vivaldi, and J.S. Bach.

MUS 4123 Music History of the Classical Period (formerly Music History 2—Music of the Classical Period) (3 q.h.)

A study of changing musical styles from Stamitz and the Mannheim School through the works of Haydn, Mozart, and early Beethoven.

MUS 4124 Music History of the Romantic Era

(formerly Music History 3—Music of the Romantic Era) (3 q.h.)

Musical styles of the nineteenth century. The role of music and the musician in the changing social, economic, political, and cultural structure of Europe. Music by Beethoven, Schubert, Berlioz, Brahms, Verdi, and Wagner will be heard, discussed, and analyzed.

MUS 4125 Music History of the Twentieth Century (formerly Music History 4—Music of the Twentieth Century) (3 q.h.)

The diversity of styles from Debussy through Stravinsky, Schoenberg, Bartok, Hindemith, and more recent developments, including *musique concrete*, chance music, and electronic music.

MUS 4126 Music History to 1750 (formerly Music History 1—Musical Literature to 1750) (3 q.h.)

A study of sacred and secular musical literature from the early Middle Ages through the Baroque. Listening to and discussing monophony, organum, music of the troubadours and trouvères; motets, masses, and secular music by Machaut, Dufay, Josquin, Palestrina, Byrd, Elizabethan music, both vocal and instrumental; early Italian opera; music of the German Protestants, culminating in the works of Bach and Handel, is designed to give the student an evolutionary view of music history and style during this period.

MUS 4130 The Symphony (3 q.h.)

A study of the symphony as the major genre in the classical, romantic, and contemporary periods. Works by Haydn, Mozart, Beethoven, Schumann, Tchaikovsky, Brahms, Sibelius.

MUS 4132 The World of Opera (3 q.h.)

Analysis of opera as a dramatic form. Aria, recitative, ensemble, and other basic elements of opera are isolated and discussed. Numbers opera, music drama, and singspiel are some of the types of opera considered. Composers whose works are analyzed include Mozart, Wagner, Verdi, and Puccini.

MUS 4133 Great Choral Literature (3 q.h.)

A study of sacred and secular choral literature from medieval to contemporary times.

MUS 4136 European Music and Art (3 q.h.)

A comparative study of how the European composers used the works of art of Spanish, English, and German painters as inspiration for their individual musical scores. Analyzing many European museum paintings and their musical counterparts gives the student knowledge of the influence of the methods and works of art on the composition of these musicians.

MUS 4137 Music of the Dance (3 q.h.)

The world of the dance, with strong emphasis on the creative art of ballet. This course probes deeply into the dynamic qualities of music for the dance and the talented people in the field who successfully brought about its present position as a fusion of all the arts.

MUS 4138 American Musical Theatre (3 q.h.)

A historical survey and analytic study of musical shows. Students will attend performances and write critical reviews.

MUS 4140 Life and Works of Mozart (3 q.h.)

A musical development from child prodigy to mature artist is traced from his own letters and from biographies. Many of his major works, including opera, symphonies, concertos, and chamber music, are analyzed in detail.

MUS 4141 Life and Works of J.S. Bach (3 q.h.)

The genius who summed up the Baroque era. A study

of the man whose every note reflected his profoundly humanistic approach to religion. Works include large choral masterpieces such as the *St. Matthew Passion*, the *Brandenburg Concertos*, the *Well-Tempered Clavier*, and the *Suites*.

MUS 4144 Life and Works of Debussy (3 q.h.)

Claude Debussy, impressionist in sound, composed music that marked the turning point toward modern trends. Much of his music for piano, orchestra, and opera will be studied, including *Pour le Piano Suite*, *Suite Bergamasque* ("Clair de Lune"), *Images* for piano and orchestra, *Nocturnes*, *La Mer*, and the opera *Pelleas and Melisande*.

MUS 4145 Life and Works of Beethoven (3 q.h.)

An analysis of the complex personality and art of this major figure. His relation to the turbulent times in which he lived and his role in classical and romantic music.

MUS 4160 Music Therapy (3 q.h.)

The course examines the application of music as a therapeutic vehicle to release suppressed emotions, to encourage self-expression in psychiatric patients, and to treat a wide variety of disorders. Music therapy, as one facet of a modern approach to health services, is currently being considered as a supplement to shock and other treatments.

MUS 4165 The Music Industry (3 q.h.)

This course will examine business-related areas of the music industry. Included will be topics such as the make-up and structure of the record industry and music publishing world, the function of performing rights organizations (ASCAP and BMI), and the role of concert and orchestral managers. Guests from the various fields will be invited to lecture in class, and trips to "behind the scenes" locations will be arranged.

MUS 4175 Music Teaching in Studio and Classroom (3 q.h.)

This course will introduce the student to philosophy, principles, and procedures in the teaching of music in both studio and classroom settings.

MUS 4176 Music Criticism—An Introduction (3 q.h.)

A practical approach to the methods of reviewing music as practiced in the press. Student reviews and discussions of area concerts will be augmented by a survey of historical criticism, public opinion, and performance practice. The course is designed to enrich a student's future as an informed music listener. Formal music background is not required.

MUS 4180 Introduction to World Music (3 q.h.)

This course provides an introduction to the varied musical cultures of non-Western societies. After an exploration of characteristics common to all musical systems, each of the following areas is investigated: the Middle East, Southern and Eastern Asia, Africa, South and Central America, and the Caribbean.

MUS 4181 Music of Africa (3 q.h.)

The music of Africa is as varied as its many linguistic and tribal identities. This course will provide a broad survey of the musical traditions of Africa and their historical, social, and cultural backgrounds, as well as an approach to musical organization, musical practice, and significant aspects of style. These will all be discussed in light of possible contributions to contemporary African-American music.

MUS 4182 Music of the Middle East (3 q.h.)

This course is an introduction to the music of selected Near Eastern and Arab cultures, such as Persian culture in the East and Ethiopic and Berber cultures in Africa, as well as the traditional instruments of the areas. The cantillation styles and practices of various chants of the Hebrew, Christian, and Islamic traditions are also included.

MUS 4200 How to Read and Write Music (3 q.h.)

Introduction to the basics of musical notation for students with little or no theory or performance background. The use of the symbols of pitch and duration is the main focus of the course. Activities include sight reading simple melodies, following scores, arranging music for small instrumental groups, transposition, and elementary rhythmic and melodic composition.

MUS 4201 Fundamentals of Music Theory 1 (4 q.h.)

The basics of music theory are presented as a foundation for further musical study and activity. Work begins with aural and visual identification of pitches, intervals, major and minor scales, and triads in the G and F clefs. Activities include rhythmic and simple melodic dictation, sight reading, elementary melodic writing, and chord construction.

MUS 4202 Music Theory 2 (4 q.h.)

Includes visual identification of pitches in the soprano, alto, and tenor clefs, transposition, some elementary arranging, writing and aural identification of cadences, elementary musical analysis, melodic and rhythmic dictation, and sight reading. *Prereq.* MUS 4201 or equiv.

MUS 4203 Music Theory 3 (4 q.h.)

Continuation of MUS 4202. Elementary four-part writing, introduction to figured bass, score reading, and harmonic analysis. Activities include harmonic as well as melodic dictation and part singing by sight. *Prereq.* MUS 4202.

MUS 4204 Music Theory 4 (3 q.h.)

Intermediate four-part writing and analysis, including use of triad inversions, seventh chords, nonharmonic tones, and simple modulation. Keyboard harmony. *Prereq.* MUS 4203 or consent of instructor.

MUS 4205 Music Theory 5 (3 q.h.)

Four-part writing, including secondary dominants, non-dominant seventh, ninth, eleventh, and thirteenth chords; linear embellishment of harmony, harmonization

of melody, and musical analysis. Keyboard harmony. *Prereq.* MUS 4204 or equiv. or consent of the instructor prior to registration.

MUS 4206 Music Theory 6 (3 q.h.)

Four-part writing, including chromatic and other non-diatonic harmony and advanced modulation; keyboard harmony; introduction to modern chord symbols and basics of serial writing; continuation of musical analysis. *Prereq.* MUS 4205 or equiv. or consent of instructor prior to registration.

MUS 4231 Musical Performance 1 (1 q.h.)

Participation in rehearsals and public performances and/or research, composition, arranging, conducting, solo and ensemble activity, etc., with the NU Symphony Orchestra, the Early Music Players, the NU Chorus, the NU Bands, or other ensembles under the supervision and coaching of a faculty member of the Department of Music. The student's progress will be evaluated at the end of the quarter by audition or otherwise. *Prereq.* Audition or permission of instructor.

MUS 4232 Musical Performance 2 (1 q.h.)

Continuation of MUS 4231. *Prereq.* MUS 4231.

MUS 4233 Musical Performance 3 (1 q.h.)

Continuation of MUS 4232. *Prereq.* MUS 4232.

MUS 4234 Musical Performance 4 (1 q.h.)

Continuation of MUS 4233. *Prereq.* MUS 4233.

MUS 4235 Chamber Music 1 (3 q.h.)

Students will rehearse, study and perform music for two to six players under the guidance of a faculty coach. Players, matched according to level, will meet weekly for one-hour sessions. Repertoire, to be selected from the full range of European concert music, will be chosen by the instructor in consultation with the students. There is a special tuition rate for NU staff. For details, contact the Department of Music, in 307 Ell Building, telephone 617-437-2440.

MUS 4236 Chamber Music 2 (3 q.h.)

Continuation of MUS 4235. *Prereq.* MUS 4235 or permission of instructor.

MUS 4237 Chamber Music 3 (3 q.h.)

Continuation of MUS 4236. *Prereq.* MUS 4236 or permission of instructor.

MUS 4241 Piano Class 1 (3 q.h.)

For beginning piano students. Students progress at their own pace, and grades are achieved by passing various step levels. Ownership of a piano is not a requirement for taking this course.

MUS 4242 Piano Class 2 (3 q.h.)

Introduces scales, arpeggios, and triads to help students perform more advanced music. The repertoire consists of original compositions by the instructor and simple works by Bartok and Kabalevsky. *Prereq.* MUS 4241 or equiv. or consent of instructor.

MUS 4243 Piano Class 3 (3 q.h.)

Introduces two-octave scales, arpeggios, and triads in all keys. Repertoire consists of Bartok, Kabalevsky, original compositions by the instructor, and duets specifically arranged for this course. *Prereq. MUS 4242 or equiv. or consent of instructor.*

MUS 4244 Voice Class (3 q.h.)

Students will have the opportunity to learn the basic vocal production required for fine singing. Repertoire, both classical and contemporary, will be chosen for each student to learn and perform in lessons and before the entire class. Lectures will be given on the following subjects: diction, the physiology of singing, resonance, registers, and interpretation. Students will also study the basics of music reading and sight-singing. Some interpretation will be discussed, and recordings of great vocal artists will be played for class analysis.

MUS 4247 Guitar Class 1 (3 q.h.)

This course is for beginners. The student is introduced to basic finger techniques, note reading, and simple chord positions. Students must provide their own instruments.

MUS 4248 Guitar Class 2 (3 q.h.)

Continuation of MUS 4247, or for those who already have a basic knowledge of finger techniques and note reading. Repertoire suitable to the advanced beginner is introduced, as well as elementary studies in improvisation. *Prereq. MUS 4247 or permission of instructor.*

MUS 4249 Guitar Class 3 (3 q.h.)

Continuation of MUS 4248. Repertoire suitable for early intermediate students is presented. *Prereq. MUS 4248 or permission of instructor.*

MUS 4250 Conducting 1 (3 q.h.)

The student is given the opportunity to learn how to develop a clear beat technique and how to prepare, teach, and polish a work in rehearsal, and is exposed to a basic repertoire and the basics of vocal/instrumental production. *Prereq. A fundamental knowledge of music reading and concurrent membership in a performing ensemble.*

MUS 4251 Recorder Class 1 (3 q.h.)

This course is for beginners. The rudiments of recorder technique and note reading are presented. Students must provide their own instruments.

MUS 4252 Recorder Class 2 (3 q.h.)

Continuation of MUS 4251, for those who already have a basic knowledge of elementary recorder technique, including two octaves of fingering and note reading. Simple solo and small ensemble literature is studied. *Prereq. MUS 4251 or permission of instructor.*

MUS 4253 Recorder Class 3 (3 q.h.)

For early intermediate students. Solo and ensemble literature is studied. Students are expected to work with both C and F instruments. *Prereq. MUS 4252 or permission of instructor.*

MUS 4254 Instrument Tutorial 1 (3 q.h.)

The Instrument Tutorial gives the student an opportunity to have individual instruction on a musical instrument or in voice. Students at any level from beginner to advanced have weekly forty-five-minute lessons. Instrumental technique and repertoire suitable to the student's level are presented. Those desiring credit are required to play an audition examination at the end of the quarter. Tutorial carries a lesson fee for individualized instruction. There is a special rate for N.U. staff. For details, contact the Department of Music, in 307 Ell Building, telephone 617-437-2440.

MUS 4255 Instrument Tutorial 2 (3 q.h.)

Continuation of MUS 4254. *Prereq. MUS 4254.*

MUS 4256 Instrument Tutorial 3 (3 q.h.)

Continuation of MUS 4255. *Prereq. MUS 4255.*

MUS 4301 Form and Analysis (3 q.h.)

This course begins with a study of the principles of unity and variety in musical composition. Representative works from all periods of Western art music are used to analyze and study such single-member forms as theme and variation, rondo, minuet and trio, sonata-allegro, passacaglia, canon, and fugue. *Prereq. MUS 4203 or equiv.*

MUS 4541 Master Class 1 (3 q.h.)

The Master Class for intermediate and advanced instrumental and vocal students includes student performance of standard repertoire appropriate to the instrument and individual student with critique by the master teacher. The main emphasis is on musical interpretation. Students are expected to prepare for weekly performance in class. Students must provide their own instruments. *Prereq. Permission of instructor.*

MUS 4542 Master Class 2 (3 q.h.)

Continuation of MUS 4541. *Prereq. MUS 4541.*

MUS 4543 Master Class 3 (3 q.h.)

Continuation of MUS 4542. *Prereq. MUS 4542.*

MUS 4800 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-level required course when the needed course is not available at the time recommended in the degree scheduling sequence. Petitions and procedural instructions are available in 204 Churchill Hall. *Allow at least six weeks to complete petition process. Prereq. 87 q.h. and approval of the Dean.*

MUS 4801 Directed Study 2 (3 q.h.)

Second opportunity to do independent work as described in MUS 4800. *Prereq. MUS 4800.*

MUS 4810 Honors Program 1 (4 q.h.)

Independent work in a selected musical area under the direction of members of the department. Limited to qualified students with the approval of the department chairman and only by special arrangement with the supervising faculty member. *Prereq. Permission of the Dean.*

MUS 4811 Honors Program 2 (4 q.h.)

Second opportunity to do independent work as described in MUS 4810. *Prereq.* MUS 4810.

MUS 4812 Honors Program 3 (4 q.h.)

Additional opportunity to do independent work as described in MUS 4810. *Prereq.* MUS 4811.

NUR 4300 Transition (9 q.h.)

The first nursing course for Registered Nurse students in the Baccalaureate Degree program introduces the purposes and objectives of this program and the philosophy of baccalaureate education. It also is designed to broaden students' perspectives of professional nursing, and provides opportunities to complement and validate, through guided and independent study, students' knowledge of roles and role conflicts, the communication process, group dynamics, and the nursing process, specifically with those patients experiencing the stresses of aging, chronic and long-term illness, and death. Additionally, the course provides opportunities to understand human nutritional needs, with specific emphasis on the aged and chronically ill individual. Registration by permission of the Academic Coordinator. *Prereq.* BIO 4104, BIO 4177, BIO 4191 or BIO 4320, PSY 4110, PSY 4111 and PSY 4112.

NUR 4301 Psychiatric/Mental Health Nursing (7 q.h.)

This course is designed to help students develop a beginning knowledge of mental and emotional illness through a basic understanding of the dynamics of human behavior and beginning skills in therapeutic intervention. The student is introduced to the concepts of family and group therapy and crisis intervention techniques. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4300.

NUR 4302 Pharmacodynamics (3 q.h.)

A course for registered nurses. Introductory expositions of pharmacologic principles with the pharmacotherapeutics of drug groups and individual drug substances of particular importance in treatment and diagnosis of disease. *Prereq.* CHM 4113.

NUR 4400 Maternal and Child Nursing (9 q.h.)

The focus of this course is on the application of the nursing process in maintaining optimal health for child-bearing and child-rearing families from various cultural and social backgrounds. The student will examine individuals at selected developmental stages. Opportunity is provided for students to apply the nursing process in client-care settings and to assist families in coping with stresses that interfere with health. Learning experiences provided assist the student in furthering personal and professional development. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4300, NUR 4302, and PSY 4241.

NUR 4401 Medical-Surgical Nursing (9 q.h.)

Focus is placed on the effects of episodes of acute illness on individuals, families, and society. Alterations

and adaptations in physiology, characteristic of acute episodes of illness, and the nurse's role in intervention are discussed. Content also includes discussion of the impact of illness on patterns of living, needs for health teaching, and continuity of care. Guided clinical experiences are planned, with emphasis on the use of the nursing process and the development of those skills necessary to plan and implement care for the adult who is in an acute care setting. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4330, NUR 4301, NUR 4302, and PSY 4241.

NUR 4500 Community Health Nursing (9 q.h.)

This course provides an opportunity for students to increase their understanding of the variety of ways in which families, groups, and communities organize to meet the health and welfare needs of their members. Particular attention is given to the role of the nurse in planning with individuals, families, groups, and community agencies to meet recognized needs. Themes occurring throughout the course include political implications of health care delivery, and current research that affects family and group health and community nursing. Value clarification and cultural experience of nurse and client are also explored. Laboratory experience involves work with individuals, families, and communities. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4400, NUR 4401, PSY 4242, SOA 4101 and SOA 4102.

NUR 4501 Contemporary Nursing (9 q.h.)

This senior-year nursing course synthesizes the major concepts of the curriculum through lectures, seminars and student participation in the selection of learning experiences. The course reflects current trends and issues in nursing and health care delivery. Students demonstrate self-direction by defining their objectives for learning experiences, pursuing an area of nursing in which they are particularly interested, and evaluating their own performance. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4400, NUR 4401, SOA 4101, and SOA 4102.

PED 4200 Cardiovascular Health and Exercise (1 cl., 3 lab, 3 q.h.)

A comprehensive cardiovascular medical and physical fitness evaluation, including a resting 12-lead electrocardiogram, an exercise electrocardiogram, resting and exercise blood pressure, an aerobic work capacity evaluation, a pulmonary function test, blood lipid profile, cardiovascular medical examination, coronary risk factor profile and medical history, test of body composition, and tests of muscular strength, endurance, and flexibility. Individual exercise programs are prescribed based on test results. Included is a structured exercise and jogging or swimming class three days per week. A weekly cardiovascular health and exercise lecture is conducted.

PHL 4100 Philosophy: Methods and Values (3 q.h.)

Introduces the student to the methods and values of thinking philosophically. The strategies of dialogue and

of informational discovery are revealed through understanding and use of the Socratic method of intellectual exchange. In analyzing the universal quest for truth, the student begins to distinguish between knowing and not knowing, dogma, and ignorance. Value issues are probed through questions in ethics and moral philosophy.

PHL 4105 Philosophy of Knowing and Reality (3 q.h.)

Students probe distinct and relative issues to provide a basis for individual reflection about the difference between knowledge and belief. Areas of theoretical focus include the nature of ultimate reality, the nature of human knowledge, and the nature and existence of God. The investigation of a variety of problems and alternative solutions helps students to think independently and self-critically. Stress is given to the development of discipline and precision in communicating ideas.

PHL 4110 Philosophy of Right and Justice (3 q.h.)

Focus is on ethics and social and political philosophy. In ethics the two basic questions to be addressed are: What sort of things are good or bad? and What actions are right or wrong? Social and political philosophy examines the theories of human nature, social change, social institutions, and major twentieth-century political theories. Additional topics such as aesthetics and philosophy of history may be discussed.

PHL 4115 Introduction to Philosophy (Intensive) (9 q.h.)

Same as PHL 4100, PHL 4105, and PHL 4110.

PHL 4140 Social and Political Philosophy (3 q.h.)

Anarchism, libertarianism, socialism, and capitalism are among the doctrines studied in this course. Questions about political and economic rights are dealt with in the context of recent philosophical debates on these issues.

PHL 4165 Moral Problems in Medicine (3 q.h.)

Social and moral problems created by medical science. Questions investigated are: Should a human life be prolonged under any condition and at any cost? What are the moral problems caused by the current medical definitions of death? Is it morally right to predetermine the physical characteristics of future generations by genetic engineering?

PHL 4170 The Human Search for Meaning (3 q.h.)

This course offers an examination of selected philosophical problems of human existence: freedom, death, sexuality, alienation, becoming a person, etc.

PHL 4180 Business Ethics (3 q.h.)

Examinations of the ethical principles and considerations applicable to the moral decisions facing a businessperson. Basic general ethical viewpoints are studied as a foundation. Specific characteristics of business life are studied, and particular cases and examples analyzed.

PHL 4181 Philosophy of Professionalism (3 q.h.)

A philosophic analysis of professionalism as an aspect of individual life and as an element of society. Examines the defining characteristics of a profession as well as the questions that arise from the nature of a profession, the typical attitudes toward the professions, and the ethical standards appropriate to the various professions.

PHL 4200 Introduction to Logic (3 q.h.)

The essentials of lucid thinking are explained in terms of basic logical concepts: deductive and inductive reasoning, valid and invalid arguments, the varied functions of language and definition. The student is given the opportunity to recognize and evaluate different kinds of arguments and methods of detecting and avoiding common errors in reasoning. The link between structured thought and effective communication is shown.

PHL 4215 Introduction to Symbolic Logic (3 q.h.)

An introduction to the fundamentals of propositional logic. Toward the end of the quarter, the notation of the logic of quantifiers is introduced.

PHL 4220 The Meaning of Death (3 q.h.)

Various philosophical and religious views concerning the meaning of death. Some of the questions discussed are: What attitude should one take regarding one's own death? What role does death play in our personal relations to others? Is a belief in an afterlife necessary in order to give meaning to this life?

PHL 4223 Philosophy of Consciousness (3 q.h.)

An exploration of the theories of consciousness and the possibility of higher states of consciousness. Readings may include some of the psychological and parapsychological literature on the subject. Also explored will be some of the techniques (meditation, etc.) that are alleged to lead to higher states of consciousness.

PHL 4225 Major Thinkers of Our Times (3 q.h.)

A study of two or three philosophers, representative of whom would be Austin, Ayer, Carnap, Dewey, Lewis, Maritain, Moore, Russell, or Whitehead. *Prereq.* PHL 4115 or *equiv.*

PHL 4230 Ethics 1 (3 q.h.)

Analysis and criticism of moral argument. How to recognize areas of moral agreement and disagreement. Introduction to major moral viewpoints and their application to specific situations.

PHL 4231 Ethics 2 (3 q.h.)

Problems and issues encountered in important areas of moral concern, such as euthanasia, punishment, and moral responsibility. Various approaches to these problems may be explained, as related to basic moral viewpoints. *Prereq.* PHL 4230.

PHL 4232 Ethics 3 (3 q.h.)

Issues and viewpoints concerning human nature and

its relevance to morality, leading to examination of such topics as victimless wrongs and the relation between morality and the law. *Prereq.* PHL 4231.

PHL 4240 Philosophy of Art (3 q.h.)

An investigation into the nature of art and the experience of beauty. The aesthetic theories of Plato, Aristotle, Tolstoy, Kant, Dewey, and others are critically compared. Also studied are the problems of artistic taste, standards of criticism, and the objectivity of artistic judgments.

PHL 4243 Existentialism (3 q.h.)

Existential philosophy is examined through a study of its greatest representatives, such as Kierkegaard, Nietzsche, Dostoevski, Heidegger, Jaspers, Camus, Jean-Paul Sartre, and Merleau-Ponty. The focus of this course will be on central themes: self-alienation, authenticity, and existential experiences.

PHL 4245 Philosophy of Religion (3 q.h.)

A study and evaluation of the arguments for the existence of God. Also studies natural and moral evil, the soul, immortality, the evidence for miracles, and the nature of religious knowledge.

PHL 4247 Theistic, Atheistic, and Agnostic Philosophies (3 q.h.)

A comparative and evaluative study of selected theistic, atheistic, and agnostic philosophies. Some of the questions studied are: Is the belief in God necessary for a comprehensive philosophy of life? How does an atheistic philosophy explain and justify the "higher values" such as love, beauty, justice, etc? How is it possible to base a philosophy on the principle of agnosticism?

PHL 4250 Philosophy of Human Nature (3 q.h.)

A philosophical and literary study of human nature. What is human nature? What is a human being? Various philosophical answers have been given to these questions. These viewpoints will be examined with special attention to the significance of tradition, social role, freedom, and decision.

PHL 4251 Images of Woman in Philosophy (3 q.h.)

A philosophical approach to the study of woman in society. Drawing from the sources within the history of philosophy and literature, topics include: the role of women in society (ideal and actual), love and marriage, oppression and isolation, and the cult of virginity.

PHL 4265 Understanding Religion in America Today (3 q.h.)

The primary focus of this course deals with the major religious expressions in America today. Topics for discussion include such contemporary issues as creationism, abortion, homosexuality, celibacy, and the right to die. Guest speakers representing new movements within established religions, as well as sects and cults, will be featured.

PHL 4270 The Great Western Religions (3 q.h.)

A study of the basic teachings of Judaism, Christianity, and Islam.

PHL 4273 Judaism (3 q.h.)

Examines the philosophy of the religion of the Jewish people: their metaphysical beliefs, their ethical beliefs, and the philosophical origins of these beliefs.

PHL 4275 The Great Eastern Religions (3 q.h.)

A study of the basic teachings of Taoism, Confucianism, Buddhism, Hinduism, and Shintoism.

PHL 4277 Hinduism (3 q.h.)

The Hinduism of the *Upanishads*, the most explicit of the mystical religions, is examined. Also investigated is the devotional aspect of Hinduism as expressed in the *Bhagavad Gita*.

PHL 4279 Buddhism (3 q.h.)

The central teachings of Buddhism are examined: the doctrine that there is no independently existing immutable self or soul, that all phenomena are impermanent, that existence is suffering, that suffering has a cause, and that there is a way to eliminate suffering.

PHL 4280 Islam (3 q.h.)

The course explores the history of Islam: its conflicts with the West, past and present; Islamic beliefs; and the future of Islam as a world religion.

PHL 4293 Mysticism: East and West (3 q.h.)

The course offers an inquiry into mystical experience through a comparative study of the writings of Christian, Buddhist, and Hindu mystics and of secondary interpretive sources. Areas taken up are the potential oneness of man and God, the conflict of mystics with traditional forms of religion, and the possibility of a common, cross-cultural basis for mysticism.

PHY 4081* Introductory Physics 1 (4 cl., 4 q.h.)

This credit cannot be used in the Associate in Engineering, Associate in Science, or the Bachelor of Engineering Technology degree programs. An introduction to mechanics: units of measurement, vectors, accelerated motion, and Newton's laws of motion.

PHY 4082* Introductory Physics 2 (4 cl., 4 q.h.)

This credit cannot be used in the Associate in Engineering, Associate in Science, or the Bachelor of Engineering Technology degree programs. Continuation of mechanics, conservation of energy and momentum, introduction to elements of heat, thermodynamics, light, and electromagnetism. *Prereq.* PHY 4081*.

PHY 4104* General Physics 1 (2 cl., 2 q.h.)

Survey of Newtonian mechanics, kinematics and dynamics of particle motion, projectile and circular motion, rotational motion, conservation laws of energy and momentum. *Prereq.* MTH 4127 (or concurrently).

*This is a Lincoln College course, offered at a different tuition rate from University College courses.

PHY 4105* General Physics 2 (2 cl., 2 q.h.)

Temperature, heat energy, mechanical equivalent of heat, wave motion, sound, Doppler's effect, properties of light, simple optical systems. *Prereq. PHY 4104*.*

PHY 4106* General Physics 3 (2 cl., 2 q.h.)

Fundamentals of electricity and magnetism, fields, potential, electric current, inductance, capacitance, electromagnetism, a-c and d-c series circuits. *Prereq. PHY 4105*.*

POL 4101 Introduction to Political Science 1 (3 q.h.)

Basic political concepts and forces of organization from the classical Greeks to the modern nation-state. The Soviet Union and the United Kingdom are contrasted as contemporary illustrations of the institutional distinction between a totalitarian and a constitutional system.

POL 4102 Introduction to Political Science 2 (3 q.h.)

The development of operational liberty in the United States and its constitutional underpinnings are considered together with an analysis of the national American political process and the conduct of recent American foreign relations.

POL 4103 Introduction to Politics (formerly Principles of Political Science 1) (3 q.h.)

An introduction to contemporary political science, including consideration of basic concepts in political analysis, the role of government institutions, political representation, political ideologies, and the scope and methods of political science.

POL 4104 Introduction to American Government (3 q.h.)

An investigation of the American governmental and political processes, constitutional institutions, political behavior, and liberties.

POL 4105 Introduction to Comparative Politics (3 q.h.)

A comparative study of constitutional and totalitarian systems, including the Western European and Soviet patterns.

POL 4300 Public Administration 1 (3 q.h.)

An introduction to the theory, forms, and processes of administration at the national and state levels.

POL 4301 Public Administration 2 (3 q.h.)

Selected problems. Case study approach to examination of relation between the theory and practice of public administration. *Prereq. POL 4300 or equiv.*

POL 4302 Public Administration (Intensive) (6 q.h.)

Same as POL 4300 and POL 4301.

POL 4303 Public Personnel Administration (3 q.h.)

The basic elements of personnel administration, including recruitment, training, classification, promotion, and

executive development. Special attention will be given to current problems, such as equal opportunity, public employee unionism, and collective bargaining. *Prereq. POL 4301.*

POL 4304 Public Budgeting (3 q.h.)

The politics, procedures, and goals of government budgeting at the Federal, state, and local levels, including expense budgeting, capital budgeting, and program budgeting. *Prereq. POL 4301.*

POL 4305 Organizational Theory (3 q.h.)

Deals with people and organizations and focuses on organizational and societal problems as a way of understanding how we can survive in a bureaucratic system.

POL 4306 Public Policy Analysis (3 q.h.)

Procedures for the analysis of public policy, including discussion of selected cases of public policy at the local, state, or Federal level. *Prereq. POL 4301.*

POL 4310 American Political Thought (3 q.h.)

Political thought from the colonial period to the present, including a study of the impact of religious, economic, and judicial theories on the structure of American ideas.

POL 4311 Research Methods (3 q.h.)

An introduction to some of the most common methods of carrying out research in the discipline of political science. Problems of theory construction and data gathering and a selection of analytical research tools, including bibliographical aids and the computer, are examined.

POL 4312 Political Parties and Pressure Groups (3 q.h.)

Party government in the United States and Great Britain. A contrasting study focusing on the interaction of party and government.

POL 4313 Government and Politics of the States (3 q.h.)

A study of state and local government, problems, and the functional and operational responses to them.

POL 4314 Urban and Metropolitan Government (3 q.h.)

The political, structural, and functional problems of an urbanizing United States, including an analysis of urban, suburban, and metropolitan governments.

POL 4318 The American Presidency (3 q.h.)

A multifaceted examination of the nation's Chief Executive: the presidential electoral process; the President's many constituencies; and the differing styles of various twentieth-century Presidents. The constitutional and extra-constitutional powers of the office are some areas considered.

*This is a Lincoln College course, offered at a different tuition rate from University College courses.

POL 4319 The Legislative Process (3 q.h.)

An institutional, functional analysis of the roles of Congress, the executive, and political parties in the legislative process.

POL 4320 American Constitutional Law (3 q.h.)

A case analysis of the development of Federalism, the separation of powers, and the role of the Federal and state courts in constitutional development.

POL 4321 Civil Rights (3 q.h.)

An evaluation of the quality and content of civil liberties in the United States. Emphasis usually is placed on the first, fifth, sixth, fourteenth, and fifteenth amendments to the Constitution.

POL 4322 Procedural Due Process (3 q.h.)

A study of due process in the American Constitutional scheme.

POL 4330 Comparative Politics (3 q.h.)

A comparative analysis of political culture, organization, and behavior in different national settings.

POL 4331 International Relations (3 q.h.)

Elements of and limitations on national power. Contemporary world politics, problems of war, and peaceful coexistence.

POL 4332 International Organization (3 q.h.)

Development of international organizations with special emphasis on the United Nations, specialized agencies, and regional organizations.

POL 4333 International Law (3 q.h.)

A procedural and substantive study of legal relations among nation-states.

POL 4335 Formulating American Foreign Policy (3 q.h.)

The Constitution and political instruments for the formulation of American foreign policy.

POL 4336 American Foreign Policy 1 (3 q.h.)

Recent and current American foreign affairs.

POL 4337 American Foreign Policy 2 (3 q.h.)

Recent and current American foreign affairs, continued. *Prereq.* POL 4336 or *equiv.*

POL 4338 European Political Parties (3 q.h.)

A study of political party systems in England, France, and Germany, emphasizing ideology, organization in and out of Parliament, electoral strategies, and voter behavior.

POL 4339 Government and Politics in the Soviet Union 1 (3 q.h.)

An analysis of modern totalitarian theory and practice is followed by a study of the ideological and historical bases of the Soviet dictatorship. *Prereq.* POL 4330 or *equiv.*

POL 4340 Government and Politics in the Soviet Union 2 (3 q.h.)

Continuation of POL 4339. A study of the Soviet Federalism, party, and state organization, with special attention to the problems of political succession. *Prereq.* POL 4339 or *equiv.*

POL 4341 Soviet Foreign Policy (3 q.h.)

A study of the evolution of Soviet foreign policy since 1917, with emphasis on the development of the international Communist movement.

POL 4342 Communism in Eastern Europe 1 (3 q.h.)

Conditions and circumstances surrounding the establishment of Communist regimes in Eastern Europe immediately after the Second World War, and their relations with the Soviet Union. *Prereq.* POL 4330 or *equiv.*

POL 4343 Communism in Eastern Europe 2 (3 q.h.)

Continuation of POL 4342. A study of nationalism, popular revolt, and socio-economic change in the 1950s and 1960s; the changing role of the Soviet Union in bloc affairs and the development of polycentrism. *Prereq.* POL 4342 or *equiv.*

POL 4350 Politics and Policies of the Developing Nations 1 (3 q.h.)

Colonialism and the struggles for independence are discussed, and the common problems of developing nations are analyzed. Topics may include economic development, urbanization, cultural fragmentation, and revolution. *Prereq.* POL 4330 or *equiv.*

POL 4351 Politics and Policies of the Developing Nations 2 (3 q.h.)

Based on the foundation provided in POL 4350. Deals with efforts of developing countries to achieve rapid social, economic and political modernization. The frequency of military takeovers and the prevalence of corrupt, inefficient government bureaucracies are discussed. The democratic and authoritarian avenues toward development are compared and evaluated. *Prereq.* POL 4350 or *equiv.*

POL 4352 Government and Politics of Latin America 1 (3 q.h.)

Discussion of the historical background of the Latin American nations and analysis of their cultural, economic, social, and political characteristics, including political violence and the breakdown of democratic governments. *Prereq.* POL 4330 or *equiv.*

POL 4353 Government and Politics of Latin America 2 (3 q.h.)

Analysis of politics of Mexico, Cuba, and Chile; comparison of the Communist, one-party, and democratic approaches to political development. Each country is used as an example. *Prereq.* POL 4352 or *equiv.*

POL 4356 Government and Politics of Northern Africa (3 q.h.)

Comparative analysis of political culture, organization, and behavior of African states north of the Sahara, with emphasis on Morocco, Algeria, Tunisia, and Egypt. *Prereq.* POL 4330 or *equiv.*

POL 4357 Government and Politics of Sub-Saharan Africa (3 q.h.)

Comparative analysis of political culture, organization, and behavior of African states south of the Sahara. *Prereq.* POL 4330 or *equiv.*

POL 4359 Government and Politics in the Middle East 1 (3 q.h.)

A study of political change, economic growth, and social adaptation in selected countries of the Middle East. Foreign policies are also considered, especially the ties of the Middle Eastern countries with Northern Africa. *Prereq.* POL 4330 or *equiv.*

POL 4360 Government and Politics in the Middle East 2 (3 q.h.)

Continuation of POL 4359. *Prereq.* POL 4359.

POL 4362 Government and Politics of Southeast Asia (3 q.h.)

A study of political instability and problems of establishing democratic structures and processes in the Philippines, Thailand, and India. *Prereq.* POL 4330 or *equiv.*

POL 4364 Communist China's Foreign Policy (3 q.h.)

A study of the Peking government's relations with Afro-Asia, the Soviet orbit, and the West. Attention is given to policy objectives, strategy, tactics, and the methods of decision making in both the party and state apparatus.

POL 4365 Government and Politics of Communist China 1 (3 q.h.)

A study of Chinese political culture, with emphasis on the nineteenth-century cultural, economic, and political impact of the West, the emergence of the Communist Party under the leadership of Mao, and the progressive disintegration of Kuomintang leadership. *Prereq.* POL 4330 or *equiv.*

POL 4366 Government and Politics of Communist China 2 (3 q.h.)

A study of ideology, party, and state organization and behavior, and the Cultural Revolution. *Prereq.* POL 4365 or *equiv.*

POL 4367 Government and Politics of Japan (3 q.h.)

The historical development of the Japanese nation, with particular attention to the growth of fascism and efforts to create a viable democracy since World War II.

POL 4370 Introduction to Political Theory (3 q.h.)

Development of the political ideas of the Western world. The major philosophers of Greece, Rome, the Christian Era, and the Renaissance.

POL 4371 Contemporary Political Theory (3 q.h.)

Political ideas and systems of political thought from Machiavelli to the present. *Prereq.* POL 4370 or *equiv.*

POL 4375 Consumer Advocacy 1 (3 q.h.)

A pragmatic course designed to define and expand the role of consumers in the marketplace. It is intended to focus upon consumer issues confronting us daily, so that individuals may deal with them intelligently and effectively. While not designed to make students "consumer-lawyers," it will touch upon legal as well as social, economic, and political aspects of consumer problems. Broad topics may include the role of consumer lobbies as special interest groups. More specific consumer problems, such as those of the elderly, may also be explored.

POL 4376 Consumer Advocacy 2 (3 q.h.)

Continuation of POL 4375. *Prereq.* POL 4375 or *equiv.*

POL 4377 Consumer Advocacy 3 (3 q.h.)

Continuation of POL 4376. *Prereq.* POL 4376 or *equiv.*

POL 4378 Current Political Issues (3 q.h.)

A topical analysis of the constitutional and political basis of selected problems in American political life.

POL 4830 Honors Program 1 (4 q.h.)

Independent work in a selected area under the direction of members of the department. Limited to qualified students with the approval of the department chairman and only by special arrangement with the supervising faculty member. *Prereq.* Approval of the Dean.

POL 4831 Honors Program 2 (4 q.h.)

Second opportunity to do independent work as described in POL 4830. *Prereq.* POL 4830.

POL 4832 Honors Program 3 (4 q.h.)

Additional opportunity to do independent work as described in POL 4830. *Prereq.* POL 4831.

POL 4840 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-level course in their major area on an individual basis. Petitions and procedural instructions are available in the office of University College Social Science Programs, 204 Churchill Hall, 617-437-2416. *Prereq.* 87 q.h. and approval of the Dean.

POL 4841 Directed Study 2 (3 q.h.)

An opportunity to initiate a second individual study as described above. *Prereq.* POL 4840.

PSY 4110 Introduction to Psychology: Fundamental Issues (3 q.h.)

An introduction to the fundamental principles and is-

sues of contemporary scientific psychology. The study of psychology is approached as a method of inquiry as well as a body of knowledge. Areas covered include the origins and methods of psychology, biological foundations of behavior, states of consciousness, learning, and memory.

PSY 4111 Introduction to Psychology: Developmental Aspects (3 q.h.)

An emphasis on growth and the life cycle, language, mental abilities, sensory and perceptual processes, and social interaction. *Prereq.* PSY 4110 or *equiv.*

PSY 4112 Introduction to Psychology: Personal Dynamics (3 q.h.)

An emphasis on motivation, emotion, personality theory and measurement, abnormal psychology, and therapy. *Prereq.* PSY 4110 or *equiv.*

PSY 4113 Introduction to Psychology Intensive A (formerly Psychology Intensive) (9 q.h.)

Combination of PSY 4110, PSY 4111, and PSY 4112.

PSY 4114 Introduction to Psychology Intensive B (6 q.h.)

Combination of PSY 4110 and PSY 4111.

PSY 4220 Statistics in Psychology 1 (3 q.h.)

Scales of measurement in psychological research, measures of central tendency, and variability. *Prereq.* PSY 4111 and PSY 4112 or *equiv.*

PSY 4221 Statistics in Psychology 2 (3 q.h.)

Measures of correlation, introduction to probability, and statistical distributions. *Prereq.* PSY 4220 or *equiv.*

PSY 4222 Statistics in Psychology 3 (3 q.h.)

Parametric and non-parametric tests of significance, including chi square, t-test, F test, and simple analysis of variance. *Prereq.* PSY 4221.

PSY 4231 Psychology of Learning 1 (3 q.h.)

An analysis of the basic principles and techniques of operant and Pavlovian conditioning. Applications to therapeutic, educational, and specialized training programs will be considered. *Prereq.* PSY 4111 or PSY 4112 or *equiv.*

PSY 4232 Motivation (3 q.h.)

Survey of the various aspects of motivation. Such areas as primary and secondary reinforcement, unconscious motivation, effectance motivation, and the assessment of motives will be considered. *Prereq.* PSY 4112 or *equiv.*

PSY 4240 Developmental Psychology: Infancy & Childhood (formerly Developmental Psychology 1) (3 q.h.)

Development of the human individual from birth through early childhood. Includes the study of biological bases of development, sensory and motor functions, learning, socialization, perception and cognition, language, in-

telligence, and personality. In addition, specific topics such as the general heredity-environment question will be considered. *Prereq.* PSY 4111 or *equiv.*

PSY 4241 Developmental Psychology:

Adolescence (formerly Developmental Psychology 2) (3 q.h.)

Continuation of PSY 4111 with focus on childhood and adolescence. *Prereq.* PSY 4111 or *equiv.*

PSY 4242 Developmental Psychology: Adulthood & Old Age (formerly Developmental Psychology 3) (3 q.h.)

This course covers the unique features and problems of the adult years and old age. Emphasizes the challenges of marriage and parenthood, vocational development, and the physical, cognitive, and social changes associated with aging. Special topics will be considered, such as the changes in the role of the elderly in today's society.

PSY 4262 Cognitive Psychology (3 q.h.)

Emphasizes the mental processes involved in the acquisition, organization, and use of knowledge, including pattern recognition and memory. *Prereq.* PSY 4111 or PSY 4112 or *equiv.*

PSY 4263 Psycholinguistics (3 q.h.)

Focuses on the nature and structure of language, various theories of human production and perception of language, and related experimental findings. *Prereq.* PSY 4111 or *equiv.*

PSY 4270 Social Psychology 1 (3 q.h.)

The socialization process, social motives, interpersonal perception, group membership and structure. *Prereq.* PSY 4111 or *equiv.*

PSY 4271 Social Psychology 2 (3 q.h.)

Attitudes, prejudice and ethnic relations, leadership, mass behavior and social movements, and the effects of mass media on communication. *Prereq.* PSY 4270 or *equiv.*

PSY 4272 Personality 1 (3 q.h.)

A systematic study of the normal personality, its growth and development. Topics generally include environmental and constitutional contributions, assessment of personality, research, and a survey of the major theories of personality. *Prereq.* PSY 4112 or *equiv.*

PSY 4290 Psychology of Women (3 q.h.)

Examines the body of knowledge concerning women, historically and in contemporary life: their function in social roles, their behavior as determined genetically, physiologically, and psychologically. Implications regarding future life styles, roles, and contributions of women will be considered. *Prereq.* PSY 4111 or PSY 4112 or *equiv.*

PSY 4351 Physiological Psychology 1 (3 q.h.)

How nerves function and work together in the nervous

system; how our sense organs provide the brain with information about the outside world; how the brain acts to produce behavior; and how such psychological concepts as perception, learning, motivation arousal, and emotion may relate to nervous system activity. *Prereq.* PSY 4111 or PSY 4112 or *equiv.*

PSY 4352 Drugs and Behavior (3 q.h.)

The application of quantitative behavior techniques in animals and humans, to determine the behavioral effects of pharmacological agents. A systematic survey of the experimental literature. *Prereq.* PSY 4111 or PSY 4112 or *equiv.*

PSY 4370 Impact of Psychology on Society (3 q.h.)

Considers such developments as the uses of intelligence and aptitude tests; psychosurgery and electroconvulsive therapy; techniques of behavior modification and control; minority and women's rights movements; direct brain stimulation by implanted electrodes; use of psychoactive drugs; use of the lie detector machine; and the application of experimental techniques to human beings. *Prereq.* PSY 4111 or *equiv.*

PSY 4372 Abnormal Psychology 1 (3 q.h.)

An introduction to the study of the etiology and dynamics of the abnormal personality. *Prereq.* PSY 4112 or *equiv.*

PSY 4373 Abnormal Psychology 2 (3 q.h.)

The symptomatology and treatment of the neuroses and psychoses. *Prereq.* PSY 4372 or *equiv.*

PSY 4374 Abnormal Psychology 3 (3 q.h.)

Psychosomatic, psychopathic, and organic disorders; varieties of psychotherapy. *Prereq.* PSY 4373 or *equiv.*

PSY 4375 Abnormal Psychology (Intensive) (9 q.h.)

Same as PSY 4372, PSY 4373, and PSY 4374. *Prereq.* PSY 4112 or *equiv.*

PSY 4381 Sensation and Perception 1 (3 q.h.)

An introduction to the nature of the perceptual world; the nature of object recognition and identification; spatial organization; contextual effects; learning and perception; and the influence of attitudinal, motivational, and personality factors on perception. *Prereq.* PSY 4111 or *equiv.*

PSY 4390 Industrial Psychology 1 (3 q.h.)

Psychology as applied to industry, including such topics as history, causation, selection and placement procedures, employee assessment, individual differences and their evaluation, and the place of psychological tests in industry. *Prereq.* PSY 4111 or PSY 4112 or *equiv.*

PSY 4391 Industrial Psychology 2 (3 q.h.)

Personnel training and development, motivation and work, attitudes and job satisfaction, engineering psychology, human factors in accident causation. *Prereq.* PSY 4390 or *equiv.*

PSY 4392 Industrial Psychology 3 (3 q.h.)

Supervision and leadership, morale, personnel counseling, the psychology of labor-management relations, human relations, and organizational behavior. *Prereq.* PSY 4391.

PSY 4410 Scientific Foundations of Psychology 1

(formerly Historical Development of Psychology 1) (3 q.h.)

Historical development of psychology from its philosophical beginnings. *Prereq.* Two of the following: PSY 4531, PSY 4551, PSY 4572, PSY 4581.

PSY 4411 Scientific Foundations of Psychology 2

(formerly Historical Development of Psychology 2) (3 q.h.)

Major schools of psychology that have influenced modern psychological research, including functionalism, behaviorism, Gestalt psychology, and psychoanalysis. *Prereq.* PSY 4410 or *equiv.*

PSY 4471 Psychological Therapies (3 q.h.)

A survey of techniques for treating deviant behavior, from classical psychoanalytical therapies through methods of behavior modification. *Prereq.* PSY 4374 or *equiv.*

PSY 4531 Psychology of Learning 2 (Laboratory) (3 q.h.)

Through direct experience, students may gain proficiency in the laboratory analysis of behavior and in evaluating common generalizations about human behavior. Students may design and perform experiments in animal and human learning, memory, decision processes, concept formation, and other topics of individual interest. *Prereq.* PSY 4231 or *equiv.* (Laboratory fee.)

PSY 4551 Physiological Psychology 2 (Laboratory) (3 q.h.)

Laboratory experiments based on evolution of the nervous system, sensory and motor mechanisms, motivation and emotion, sleep, attention, perception, learning, and memory. *Prereq.* PSY 4351 or *equiv.* (Laboratory fee.)

PSY 4572 Personality 2 (Laboratory) (3 q.h.)

Introduction to methods and areas of research in personality. Usually includes problems of measurement, behavioral and dynamic concepts, and laboratory projects. *Prereq.* PSY 4272 or *equiv.* (Laboratory fee.)

PSY 4581 Sensation and Perception 2 (Laboratory) (3 q.h.)

Students usually do laboratory experiments on seeing, hearing, touching, and tasting. Studies may include dark adaptation, loudness, binaural interaction, brightness constancy, two-point touch thresholds, information processing, and interactions between the senses. *Prereq.* PSY 4381 or *equiv.* (Laboratory fee.)

PSY 4611 Senior Seminar in Psychology (3 q.h.)

Small groups of students meet to discuss topics of mutual interest in psychology. Each seminar has a different flavor, depending upon the student group and faculty. *Prereq.* Senior status or consent of instructor.

PSY 4811 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-class course in their major area on an individual basis. Petitions and procedural instructions are available in the office of University College Social Science Programs, 204 Churchill Hall, 617-437-2416. *Prereq.* 87 q.h.

PSY 4812 Directed Study 2 (3 q.h.)

An opportunity to initiate a second individual study as described in PSY 4811. *Prereq.* PSY 4811.

PSY 4813 Field Work in Psychology (6 q.h.)

Refer to page 59 describing field work courses. *To be discussed with Department Consultant or Major Adviser prior to registration.*

PSY 4891 Honors Program 1 (4 q.h.)

Prereq. Approval of the Dean.

PSY 4892 Honors Program 2 (4 q.h.)

Prereq. PSY 4891.

PSY 4893 Honors Program 3 (4 q.h.)

Prereq. PSY 4892.

PUR 4351 Purchasing 1 (3 q.h.)

An introduction to the function of purchasing in the industrial organization. Topics include the span of purchasing responsibilities, objectives, organization, and personnel requirements; purchasing policy and systems; the role of the computer in regulating purchasing planning, transactions, and information retrieval; acquisition of purchased materials, development of sources of supply, and assurance of material's quality; and determination and maintenance of required inventory levels. Additional topics covered are control of inventory investment, price determination, cost and price analysis of purchase transactions; make or buy decisions, and role of standardization and value analysis.

PUR 4352 Purchasing 2 (3 q.h.)

The process of purchase negotiations, budgets, purchase of capital equipment. Topics include purchasing for public and nonprofit institutions; disposition of surplus and obsolete materials, traffic and material handling; forward buying and speculation; ethical considerations in purchasing; purchasing law, contract cancellations, purchasing reports, and evaluation of purchasing performance and control and audit procedures. *Prereq.* PUR 4351.

PUR 4353 Purchasing (Intensive) (6 q.h.)

Same as PUR 4351 and PUR 4352.

PUR 4355 Materials Acquisition Function (3 q.h.)

A survey of the procurement function as found in in-

dustry. Designed to furnish students with a broad comprehension of the acquisition function. The mission, procedures, and interfacing of purchasing with other functions and its legitimate objectives are explored. Systems techniques, organizational structures, and required skills are investigated, with particular attention given to the integration of this function into the total cycle of product creation.

PUR 4357 Art and Technique of Negotiation in Business (3 q.h.)

The process of buyer/seller communication and exchange in arriving at sound purchasing transactions. Explores the reasons for choosing this negotiation, interactive process for arriving at a more satisfactory agreement between buyer and prospective vendor. Accepted strategies and tactics employed by both parties as effective means of achieving legitimate objectives in industrial purchasing activity. Economic and technical considerations are discussed. Psychological and interpersonal environments of the negotiating situation are explored in detail. Students have an opportunity to engage in workshop demonstrations of effective negotiating practice. *Prereq.* PUR 4351.

PUR 4358 Materials Requirements Planning (3 q.h.)

Analyzes the MRP process for integrating and organizing purchasing and inventory management functions. System is based on production schedule requirements and variations rather than on historical data. System aims at assisting the process of capacity planning for maximum manufacturing efficiency. MRP provides a rational base for economical procurement planning and control. Concentrates on MRP's unique concepts for managing material supply activity and other related critical operating problems.

PUR 4359 Subcontract Management (3 q.h.)

The administration of procurement subcontracts is of major concern to many industrial specialties: purchasing, sales, engineering, project management, finance, manufacturing, and general management. Aims at considering all aspects of this significant procurement function, from development of the work statement through source selection, negotiation, award and post-award administration. Selected cases and exercises will be employed to enhance the student's appreciation of the practical aspects of subcontracting policies and procedures, as well as providing material for class participation. Subcontract requirements in both a commercial as well as a government environment will be treated. *Prereq.* PUR 4352.

PUR 4360 International Procurement (3 q.h.)

An overview and introduction to international procurement, with emphasis on negotiation of special terms and conditions, offset, co-production buys. Topics include differences in overseas freight management, financial and contractual requirements, and discussion of reliability/quality and procurement practices in international procurement. *Prereq.* PUR 4352.

RAD 4100 Radiologic Technology Orientation 1 (3 cl., 3 q.h.)

A study of the history of x-radiation, radiology department organization, medical terminology, patient care and nursing procedures, and contrast media.

RAD 4101 Radiologic Technology Orientation 2 (3 cl., 3 q.h.)

A study of medical and surgical diseases. *Prereq.* RAD 4100.

RAD 4102 Radiologic Science 1 (4 cl., 4 q.h.)

A survey of the basic concepts of physics, units of measurement, Newton's law of motion, work, energy, atomic theory of matter, electric currents, magnetism, generators, motor production, control of high voltage, and x-ray production. *Prereq.* MTH 4110.

RAD 4103 Radiologic Science 2 (4 cl., 4 q.h.)

Interaction of x-rays and matter, modern x-ray tubes, x-ray circuits; simulator experiments, fluoroscopic systems, properties of solids, liquids and gases. Temperature and heat transfer and their application. *Prereq.* RAD 4102.

RAD 4104 Principles of Radiology 1 (4 cl., 4 q.h.)

A study of practical, basic radiation protection and principles of positioning patient for radiographic studies. *Prereq.* RAD 4114.

RAD 4105 Principles of Radiology 2 (4 cl., 4 q.h.)

A study of the principles of precise body positioning for detailed radiographic studies. *Prereq.* RAD 4104.

RAD 4106 Radiologic Photography and Exposure 1 (4 cl., 4 q.h.)

A study of the basic principles of image formation, electromagnetic spectrum, x-ray tube construction, factors controlling radiographic quality. *Prereq.* RAD 4103 and MTH 4110 or equiv.

RAD 4107 Radiologic Photography and Exposure 2 (4 cl., 4 q.h.)

A study of accessory items used to improve radiographic quality; in-depth methods of protection for patient and personnel; film critique and mathematical exposure concepts. *Prereq.* RAD 4102 and RAD 4106.

RAD 4108 Radiology Practicum 1 (3 q.h.)

Application of theoretical principles by performing radiographic procedures under supervision. Assigned homework to be part of lesson plans received while at the hospital; lectures presented at the hospital and University. Program requirement: minimum of 2 hrs./week.

RAD 4109 Radiology Practicum 2 (3 q.h.)

Continuation of RAD 4108. Program requirements: minimum of 2 hrs./week. *Prereq.* RAD 4108.

RAD 4110 Radiology Practicum 3 (3 q.h.)

Continuation of RAD 4109. Program requirement: minimum of 2 hrs./week. *Prereq.* RAD 4109.

RAD 4111 Radiology Practicum 4 (3 q.h.)

Continuation of RAD 4110. Program requirement: minimum of 2 hrs./week. *Prereq.* RAD 4110.

RAD 4112 Gross Anatomy and Physiology 1 (3 cl., 2 lab, 4 q.h.)

Fundamental concepts of living organisms, chemical and biological characteristics of cellular metabolism. The skeletal system and its appendages. General nomenclature, anatomical names and terms. *The required laboratory for this course is designated RAD 4113, Lab for RAD 4112, and must be taken simultaneously with the course.*

RAD 4114 Gross Anatomy and Physiology 2 (3 cl., 2 lab, 4 q.h.)

The systems of the body and the relationships among them. The structure and function of each. *The required laboratory for this course is designated RAD 4115, Lab for RAD 4114, and must be taken simultaneously with the course. Prereq.* RAD 4112 or equiv.

RAD 4300 Advanced Radiologic Technology 1 (3 cl., 3 q.h.)

A study of special procedures involving cardiac vascular procedures, neuroradiology, lymphangiography; other related procedures. *Prereq.* RAD 4103, RAD 4105, and RAD 4107.

RAD 4301 Advanced Radiologic Technology 2 (3 cl., 3 q.h.)

A continued study of special procedures. *Prereq.* RAD 4300. Available late afternoon.

RAD 4302 Imaging Modalities (3 q.h.)

Surveys imaging modalities other than diagnostic x-rays, including xerography, thermography, nuclear medicine, radiation therapy, computerized axial tomography, nuclear magnetic resonance and ultra sound. *Prereq.* RAD 4102, RAD 4105, RAD 4107, and RAD 4114. Available late afternoon.

RAD 4303 Radiation Protection—Radiobiology (3 q.h.)

Covers atomic structure, properties of radioactive materials, units of radiation, long-term/short-term biological effects, survey instruments, reduction of exposure to patients, Federal x-ray standards, and radiopharmaceuticals. *Prereq.* RAD 4107. Available late afternoon.

RAD 4304 Cross-Sectional Anatomy (3 cl., 4 q.h.)

The course will approach anatomy regionally. Review of standard anatomy with emphasis on relations of organs and structures to transverse and longitudinal section appearance. *Prereq.* RAD 4114 or equiv.

RE 4301 Real Estate Fundamentals 1 (3 q.h.)

An introduction to the basic principles and terminology of real estate to serve as a background for application in the various practices of the real estate business.

RE 4302 Real Estate Fundamentals 2 (3 q.h.)

A general examination of the practices of real estate brokerage (including the preparation for the broker's or salesperson's state examination), real estate appraisal, finance, development, management, and investment. Upon successful completion of RE 4301 and RE 4302, students receive a certificate of completion, which enables them to take the Massachusetts broker's or salesperson's examination. *Prereq.* PUR 4301.

RE 4303 Real Estate Fundamentals (Intensive) (6 q.h.)

Same as RE 4301 and RE 4302.

RE 4323 Real Estate Appraisal 1 (3 q.h.)

A fundamental course in the appraisal of single-family residences; analysis of city or town neighborhood influences, site evaluation, building diagnosis, depreciation; study of the various approaches to value; appraisal report preparation. *Prereq.* RE 4302.

RE 4324 Real Estate Appraisal 2 (3 q.h.)

A specialized course in the appraisal of income properties; application of the cost, market, and income approaches to apartment buildings and other commercial and industrial properties; and application of the various methods of capitalization and residual techniques. *Prereq.* RE 4323.

RE 4326 Appraising a Single-Family Dwelling (3 q.h.)

A fundamental course in the basic theory of the appraising of a single family dwelling for the beginning appraiser, real estate broker, salesperson, lender, assessor, and builder. Topics include city and neighborhood analysis, site valuation, building materials and cost, and depreciation. The course deals with selective research into appropriate market data, assemblage of pertinent information, the application of relevant analytical techniques, and appraisal report preparation, including FNMA/FMAC report forms.

RE 4328 Real Estate Financial Analysis 1 (3 q.h.)

Provides the tools that permit the student to examine and analyze critically any proposed real estate investment. Examines in detail the financial aspects of acquisition, ownership, and disposition. Considers taxation of investments, forms of property ownership (organization of the venture), analysis of operating statements, financial accounting, use of leverage, "tax-sheltered" investments, special situations, and other considerations. Develops criteria of risk and return on investment (R.O.I.) that should be established by various types of investors. *Prereq.* RE 4324 or permission of instructor.

RE 4329 Real Estate Financial Analysis 2 (3 q.h.)

A detailed analysis of the risks and rewards of real estate investments, problems involved in financing income properties, with emphasis on the use of case studies, homework problems, class discussion and debate. Class participation is stressed. *Prereq.* RE 4328.

RE 4330 Real Estate Financial Analysis (Intensive) (6 q.h.)

Same as RE 4328 and RE 4329. *Prereq.* RE 4324.

RE 4340 Real Estate Development (3 q.h.)

A practical step-by-step approach to the organization and development of a real estate project for the entrepreneur, banker, or broker. Topics include the role of the developer, acquisition of land, site analysis, construction finance, gap financing and permanent commitments, project budgeting for capital costs and for income and expense, selection of professionals, negotiations of agreements with contractors and owners, marketing the completed project. Case studies and guest lecturers may be used. *Prereq.* RE 4329 or permission of instructor.

RE 4341 Real Estate Law 1 (3 q.h.)

Concentrates on private real estate law, including ownership rights in land, leasehold rights and easements in the land of another; legal forms of ownership; the transfer and acquisition of title and of other interests; recording of deeds, leases, and other instruments; and the landlord-tenant relationship.

RE 4342 Real Estate Law 2 (3 q.h.)

Concentrates on public real estate law, including government powers, rights, and controls on privately owned real estate; zoning and subdivision controls; conservation controls; taxation of real estate; rent controls; and eminent domain. *Prereq.* RE 4341.

RE 4344 Real Estate Management 1 (3 q.h.)

Designed to help the student prepare for the practical problems of real estate management. Stresses the requisite day-to-day management of commercial, industrial, and residential properties, as well as the need for a management strategy as it relates to long-term property values. *Prereq.* RE 4302 or permission of instructor.

RE 4345 Real Estate Management 2 (3 q.h.)

Continuation of RE 4344. *Prereq.* RE 4344.

RE 4346 Real Estate Management 3 (3 q.h.)

Continuation of RE 4345. *Prereq.* RE 4345.

RE 4347 Real Estate Title Examination (3 q.h.)

A specialized course dealing with the examination of title to real estate and the preparation of a complete report. *Prereq.* RE 4341 or permission of instructor.

REC 4101 Principles and Practices of Therapeutic Recreation 1 (3 q.h.)

Overview of the field, including rationale, history, philosophy, goals, treatment settings, problems of institutionalization, adjunctive therapies, and professional development in therapeutic recreation. Course will conclude with introduction of case method.

REC 4102 Principles and Practices of Therapeutic Recreation 2 (3 q.h.)

Basic medical terminology with an overview of trauma

matic, sensory, neurological, orthopedic, and cardiovascular disabilities, prosthetics, and orthotics. A study of attitudinal and societal barriers to the handicapped. *Prereq.* REC 4101 or permission of consultant.

REC 4103 Principles and Practices of Therapeutic Recreation 3 (3 q.h.)

Integrated case method approach to understanding the diversified needs of the person who is handicapped. Psychological, sociological, and emotional impact of disabilities. Planning, charting, adapting, and evaluating individual and group activities. *Prereq.* REC 4102.

REC 4110 Group Dynamics and Leadership 1 (3 q.h.)

Self-awareness, identity, interpersonal and intergroup communications. The group process factors influencing the need to join the group, motivation to participate, membership screening, size, purpose, behavior patterns, developing rapport, open-ended and closed approaches, group problem solving, brainstorming, conflict resolution.

REC 4111 Group Dynamics and Leadership 2 (3 q.h.)

Organization, development, and structure of groups, team building, role and value clarification, ramifications of change, characteristics, styles and techniques of leadership. *Prereq.* REC 4110.

REC 4112 Group Dynamics and Leadership (Intensive) (6 q.h.)

Equivalent to REC 4110 and REC 4111.

REC 4300 Arts and Crafts 1 (3 q.h.)

Overview of the creative media available for individual projects. Development of the technical capability to utilize a wide variety of materials in imaginative ways. Compilation of personal arts and crafts manual as reference tool.

REC 4301 Arts and Crafts 2 (3 q.h.)

Adaptation of creative skills to a therapeutic setting. Developing flexibility and sensitivity to the client's personal needs and interests so that innovative craft projects are designed to meet needs and to maximize their therapeutic benefits.

REC 4302 Arts and Crafts (Intensive) (6 q.h.)

The equivalent of REC 4300 and REC 4301.

REC 4310 Social Recreation (3 q.h.)

Planning and motivation for social recreation activities; ice breakers, mixers, active and inactive games, adapting and creating joint projects, special events.

REC 4311 Music Therapy (3 q.h.)

An introduction to the field of music therapy, including an exploration of the historical and current theories and various contemporary techniques and their uses in various clinical settings. Includes a survey of the literature of therapy, with special education, psychiatric, and geriatric areas.

REC 4312 Media Resources and Techniques (3 q.h.)

Designing overlays, transparencies, posters, brochures, and other materials. Use of slides and tapes. Learning the operation of P.A. systems; the 16 mm. opaque film strips, and overhead projectors; and other photographic devices.

REC 4313 Therapeutic Use of Dramatics (3 q.h.)

Reinforcement and socialization through pantomime, improvisations, puppetry, skits and stunts, dramatic games, storytelling, one-act plays, with emphasis on creativity in the therapeutic setting.

REC 4401 The Nursing Home Experience (3 q.h.)

Exchange of empirical data relating to case experiences and institutional procedures encountered by activity leaders and other practitioners in nursing homes. Feasibility of functional innovations will be discussed in relation to present practices.

REC 4410 Therapeutic Recreation in Rehabilitation (3 q.h.)

Philosophy, goals, and background in rehabilitation and team membership concepts. The role of therapeutic recreation in the acute and chronic hospital, the rehabilitation center, and various community settings.

REC 4420 Activity and Movement Analysis (3 q.h.)

Basic anatomy as it relates to the identification of muscle groups involved in action. Analysis of both the movement and the ingredients of the activity and their suitability with given disabilities. *Prereq.* BIO 4175.

REC 4425 Mental Illness and Retardation (3 q.h.)

The origins, manifestations, and treatment approaches for mental illness and retardation are explored. Historical and contemporary overviews include treatment settings, case studies, and trends in mental illness and retardation.

REC 4430 Therapeutic Recreation in Child Development (3 q.h.)

Growth and development patterns from birth to age 12 years; diagnosing early childhood abnormalities; study of the need for play, learning through play, therapeutic values of play, social ethics, safety considerations, and others.

REC 4440 Humanistic and Holistic Approaches in Therapeutic Recreation (3 q.h.)

Provides students with a concrete understanding of the use of trust, imagination, verbal/nonverbal communication, intuition, emotions, the will, spirit, motor coordination, sensory awareness, and success-oriented/self-responsibility in working with people of all ages.

REC 4445 Community Recreation for the Handicapped (3 q.h.)

Developing and initiating a comprehensive special needs program in the community. Integrating efforts with school and special education departments, municipal officials, and parent groups. Needs statements,

concepts of budgeting and funding, publicity, program development and site visitations are included.

REC 4460 The Process of Aging (3 q.h.)

The psycho-social dynamics of growing old, physical changes as a result of aging, needs of elderly people, attitudes toward work, retirement, and leisure. A study of dependency, remotivation, death and dying, as well as programs and services that add quality to the long life.

REC 4461 Outdoor Education for the Handicapped (3 q.h.)

Basic goals, processes, and considerations of camping and outdoor education for this special population. Emphasis on social integration with nonhandicapped children and innovative programs.

REC 4462 Leisure Counseling (3 q.h.)

Remedial and developmental process designed to produce behavioral and attitudinal changes in the leisure use patterns of the client. Development of competence in identification, utilization, and referral to appropriate recreational resources. Leisure counseling fundamentals compared in a variety of recreational settings.

REC 4500 Field Practicum 1 (4 q.h.)

Assigned field experience in a treatment facility under supervision of a qualified professional. Student has the opportunity to learn about the direct service application of classroom theory through observation and participation, in conjunction with written reports, evaluation, and seminars. The experience averages eight hours a week for 12 weeks. *Prereq. REC 4103 plus 12 q.h. of professional courses and permission of practicum coordinator.*

REC 4501 Field Practicum 2 (4 q.h.)

Continuation of REC 4500. *Prereq. REC 4500.*

REC 4802 Independent Study 1 (4 q.h.)

A research study geared to the individual's area of professional focus. The student is expected to gather, analyze, and evaluate original data and periodically submit progress reports to research adviser. *Prereq. REC 4103, plus permission of consultant.*

REC 4803 Independent Study 2 (4 q.h.)

Continuation of REC 4802. *Prereq. REC 4802.*

SOA 4100 Anthropology 1 (3 q.h.)

An introduction to elements of physical anthropology, covering such subjects as primates, fossil humans and evolution, problems of heredity and genetics, race and racial classifications, the bases of cultural behavior. *(Not open to students who have credit for SOC 4010.)*

SOA 4101 Anthropology 2 (3 q.h.)

An introduction to socio-cultural anthropology. Examines the nature of language and the cultural institutions of human groups with simple foraging and horticultural adaptation. *Prereq. SOA 4101 or equiv. (Not open to students who have credit for SOC 4011.)*

SOA 4102 Anthropology 3 (3 q.h.)

The institutions and cultures of technologically advanced societies and states. *Prereq. SOA 4101 or equiv.*

SOA 4104 Anthropology (Intensive) (9 q.h.)

Same as SOA 4100, SOA 4101, and SOA 4102.

SOA 4135 Language and Culture (3 q.h.)

The functions of language and other forms of communication in human society. An introduction to analysis of the relation between patterns of communication and other aspects of culture.

SOA 4146 Peasant Societies in a Changing World (3 q.h.)

Analysis of changes affecting traditional peasant cultures in the non-Western and Western worlds. Examines the processes occurring in situations involving culture contact, conquest, and colonialism.

SOA 4155 Individual and Culture (3 q.h.)

Cross-cultural comparisons of the socialization and enculturation of children and adults with respect to roles, values, and personality. Course may examine theories and methods used in psychological anthropology.

SOA 4160 Sex, Sex Roles, and Family (formerly Studying the Family Cross-Culturally) (3 q.h.)

Analyzes popular and scientific notions about sex and family by examining the social patterning of interactions in our culture, other cultures, and other species. Emphasizes the changing relationships between men and women.

SOA 4266 Folklore (3 q.h.)

Folklore, art, and song in various societies and how they are studied. Contemporary American materials are examined.

SOA 4320 Field Work in Anthropology (6 q.h.)

Refer to page 59 describing field work courses. To be arranged with a department field work adviser prior to registration. *Prereq. Major in Sociology-Anthropology and completion of 15 credits in Anthropology.* (Students may receive credit for only one department field work course. Credit for SOA 4320 precludes credit for SOC 4805. Students who are eligible for department Honors courses may take any combination of field work and Honors totaling three courses.)

SOA 4322 Anthropological Theory (3 q.h.)

History of the major orientations and philosophies in anthropology; evolutionist, culture area, and historical approaches; and functional, structural, ecological, and cognitive modes of analysis.

SOA 4425 Social Organization of Non-State Societies (3 q.h.)

Detailed studies of the institutions of peoples with collecting-hunting and horticultural subsistence economies.

SOA 4430 Native North American Peoples (3 q.h.)

Examines the past and present circumstances of a number of native North American peoples.

SOA 4431 African Peoples and Cultures (3 q.h.)

African geography, prehistory, and culture; the spectrum of societal complexity, ranging from Mbuti egalitarianism to Ashanti federation; and the problems of political, economic, and social change in contemporary Africa.

SOA 4434 Latin American Peoples and Cultures (3 q.h.)

The tribal and peasant adaptations of native and Hispanic populations to changing conditions in Latin American.

SOA 4470 Religion in Cross-Cultural Perspective (3 q.h.)

Comparative analysis of the rituals, beliefs, and religious institutions of various human groups.

SOC 4010 Principles of Sociology 1 (Recommended for majors) (4 q.h.)

An introduction to basic concepts and theories relating to the study of humans as participants in group life. Emphasis is placed on socialization, culture, social structure, primary groups, family, social stratification, and population. *(Not open to students who have credit for SOC 4100 or SOC 4101.)*

SOC 4011 Principles of Sociology 2 (4 q.h.)

Continuation of SOC 4010, emphasizing a critical analysis of American society with particular attention to problems of social, political, urban, and industrial change. *Prereq. SOC 4010 or equiv. (Not open to students who have credit for SOC 4101 or SOC 4102.)*

SOC 4100 Introduction to Sociology: Fundamental Issues (formerly Sociology 1) (3 q.h.)

Covers the basic theoretical perspectives, research methods, and concepts of sociology, including society, status and role, socialization, and social groups. *(Not open to students who have credit for SOC 4010.)*

SOC 4101 Introduction to Sociology: The Individual and Social Roles (formerly Sociology 2) (3 q.h.)

Covers the involvement of individuals in society, including culture, social interaction, deviance, sex roles, sexuality, and family. *Prereq. SOC 4100 or equiv. (Not open to students who have credit for SOC 4010 or SOC 4011.)*

SOC 4102 Introduction of Sociology: Critical Issues Facing Society (formerly Sociology 3) (3 q.h.)

Explores social factors of importance, including business and industry, population and ecology, science and technology, class, and race and ethnic relations. *Prereq. SOC 4100 or equiv. (Not open to students who have credit for SOC 4011.)*

SOC 4103 Introduction to Sociology Intensive A (formerly Sociology Intensive) (9 q.h.)

A combination of SOC 4100, SOC 4101, and SOC 4102.

SOC 4104 Introduction to Sociology Intensive B (6 q.h.)

A combination of SOC 4100 and SOC 4101.

SOC 4120 Sociology of Boston (3 q.h.)

The City of Boston from the perspectives of environmental development, neighborhood and intergroup relations, institutional services, and symbolic meanings. The city is a laboratory for exploring the people's search for a lifestyle and the satisfaction of their needs. Field trips with workbook. Use of documentary and literary sources for term paper report. *(Does not meet elective requirements for Sociology/Anthropology major.)*

SOC 4125 Social Problems (3 q.h.)

An overview of contemporary American social problems and the application of sociological concepts, methods, and principles to these problems.

SOC 4147 Urban Sociology (3 q.h.)

Analyses of the various causes, characteristics, and effects of urbanization in several different cultures. Specific attention is given to the problem of urban and suburban living and the changing structure of the city.

SOC 4154 Sex and Gender Roles in Society

(formerly Sex in Society: The Study of Sex Roles) (3 q.h.)

Analysis of historical and contemporary development in how men's and women's changing roles are related to society at large.

SOC 4155 Sociology of the Family 1 (formerly Family and Marriage 1) (3 q.h.)

A comparative and historical treatment stressing the past history and development of the family.

SOC 4156 Sociology of the Family 2 (formerly Family and Marriage 2) (3 q.h.)

A continuation of Sociology of the Family 1, emphasizing the backgrounds of contemporary problems in the context of functions, forms, and processes of this institution.

SOC 4160 Sociology of Education (3 q.h.)

The comparative study of formal and informal educational systems. Emphasis will be placed on the structures and functioning of educational institutions for the larger societies of which they are a part.

SOC 4170 Race and Ethnic Relations (formerly Intergroup Relations 1) (3 q.h.)

A study of the relationships among various racial, national, cultural, and religious groups, with emphasis on the development of black-white relationships in American society. Covers the problems of contemporary minority peoples in American and other societies.

SOC 4175 Sociology of Work (3 q.h.)

Study of the world of work, focusing on the development of occupational cultures, the nature of careers, and the meanings and implications of professionalization. As part of the course, students will be encouraged to do a project on an occupation they are considering for a

career or one in which they have had practical experience on co-op.

SOC 4176 Business and Industrial Sociology (3 q.h.)

The role of industry in modern society. Similarities and dissimilarities among industrial societies, bureaucracy and its alternatives, unions, supervision democracy and manipulation, the individual on the assembly line, sabotage of the organization, and the role of wages and alienation.

SOC 4185 Sociology of Deviant Behavior (3 q.h.)

Analysis of a variety of social problems with relation to the organization of society. Particular attention will be given to alcoholism, sex offenses, drug abuse, mental disorders, and other responses to conditions of urban industrial society.

SOC 4186 Social Control (3 q.h.)

The study of group membership as a determinant of behavior; analysis of status and role, patterns of authority, power, and group ideology, as factors in the evaluation of conduct.

SOC 4190 Juvenile Delinquency (3 q.h.)

A study of factors in juvenile delinquency and an examination of their implications for prevention, rehabilitation, and treatment.

SOC 4195 Drugs and Society (3 q.h.)

An introduction to the sociology of drugs. Examines social definitions of drugs, conditions of their use, and socialization into drug use. Considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs will be considered.

SOC 4205 Law and Society (3 q.h.)

The functions of law in modern society; legislation, litigation, and adjudication as social processes; the legal profession, the courts, and the administration of justice; an examination of laws and judicial decisions on controversial social issues; examination of laws regulating domestic, industrial, and other major social relationships.

SOC 4215 Medical Sociology (3 q.h.)

Sociological concepts and research relating to the study of patterns of behavior in the areas of health and disease. Emphasis on the family, community, medical organizations, class, and status as social subsystems related to the field of health.

SOC 4220 Sociology of Mental Health (3 q.h.)

Sociological aspects of mental health and mental disorder; the social history of mental illness, epidemiological and cross-cultural approaches to mental disorder, the career of the mental patient, the functions of psychiatry in society, community and social treatment modalities, and social psychiatry.

SOC 4225 Social Gerontology: The Aged in Society (3 q.h.)

The course offers a survey of issues and questions on

aging, with special attention to social and economic consequences of the aging process, including retirement and productivity, health care problems, nursing home residences, widower- and widowhood, and the approach of death. Examples relating to aging in other cultures are presented in a search for new answers to social problems of aging in the United States. Students have the opportunity to learn to anticipate, cope with, and even prevent problems of aging that concern self, family, and clients/patients.

SOC 4240 Sociology of Human Service Organizations (3 q.h.)

The structure and resource bases of various human service organizations are analyzed in terms of the types of services they offer, how these services are delivered, and the populations that are served. The managerial structure of traditional human service agencies and alternative community resource groups will be contrasted to better understand how well the needs of clients are being met.

SOC 4241 Human Services Professions (3 q.h.)

The human services, viewed from the perspectives of the recipient, the worker, and the society at large, are analyzed with respect to 1) why they are needed, 2) how agencies and programs developed, and 3) the basic skills, attitudes, values, and knowledge required of the human service worker today.

SOC 4245 Poverty and Inequality (formerly Sociology of Inequality) (3 q.h.)

An analysis of American class and ethnic differences in historical perspective, drawing on comparisons with other countries. Critical evaluation of sociological research and theories relating to the causes and effects of and societal responses to poverty. Suitable for students in applied fields such as nursing, criminal justice, education, allied health, pre-med, and pre-law.

SOC 4255 Sociology of Sport (3 q.h.)

An analysis of games and sport from a sociological perspective, with particular reference to contemporary American society. Included are such topics as the role of play in modern society, the social organization of specific games and sports, and the relation of organized sport to the larger society.

SOC 4260 Introduction to Social Work Practice 1 (3 q.h.)

An introduction to the functions of the helping profession of social work, its settings and methods. Specific techniques such as interviewing, history taking, and recording skills are presented.

SOC 4261 Introduction to Social Work Practice 2 (3 q.h.)

Continuation of SOC 4260, with particular attention to the functioning of social workers in selected settings. *Prereq.* SOC 4260 or equiv.

SOC 4262 Introduction to Social Work Practice 3 (3 q.h.)

Continuation of SOC 4261, with emphasis on enhance-

ment of practice skills. *Prereq.* SOC 4261 or equiv.

SOC 4286 Science and Society (3 q.h.)

Science has had a profound effect on our society, and scientists have seen the ways in which political, economic, and social forces have guided developments in their fields. Issues such as the "responsibility" and "autonomy" created by this interdependence will be explored. Emphasis is on the social structures within which science operates and is communicated, science as an occupation and profession, and science as a system of thought and set of tools for producing knowledge.

SOC 4300 Social Theory 1 (3 q.h.)

A historical survey of sociological theorists, including the work of de Tocqueville, Comte, Marx, Durkheim, Cooley, and others. *Prereq.* Consent of the instructor or 12 q.h. in Sociology/Anthropology.

SOC 4301 Social Theory 2 (3 q.h.)

A study of major theoretical issues in sociology. Discussion concentrates on systematic questions and topics rather than on particular theorists, but material is drawn from theorists such as Weber, Simmel, Thomas, Mannheim, Merton, and Parsons. *Prereq.* SOC 4300 or equiv.

SOC 4302 Social Theory 3 (3 q.h.)

A seminar in which the principal focus will be upon questions of theoretical interest, e.g., the problem of order, the problem of change, the role of the individual in change. Students will present papers in class. *Prereq.* SOC 4301 or equiv.

SOC 4303 Social Theory Intensive (9 q.h.)

A historical survey of sociological theorists, including the work of de Tocqueville, Comte, Marx, Durkheim, Cooley, Weber, Simmel, and others. More recent material is drawn from such theorists as Mannheim, Merton, and Parsons. Students may be required to present papers in class on questions of theoretical interest, e.g., the problem of order, the problem of change, the role of the individual in change. *Prereq.* Consent of the instructor or 12 q.h. in Sociology/Anthropology. (Not open to students who have credit for SOC 4300, SOC 4301, or SOC 4302.)

SOC 4310 Class, Power, and Social Change (3 q.h.)

Theories of social equality and inequality as applied to the exercise of power and to the growth and development of social movements and group conflict, and as seen from the point of view of large-scale social change.

SOC 4321 Social Research Methods 1: Generating and Investigating Research Problems (4 q.h.)

Methods for producing knowledge through social research will be examined. Emphasis will be placed upon the practical aspects of research, i.e., the problems that sociologists face in doing research and how they have solved these problems. Students will be required to design a small study.

SOC 4322 Social Research Methods 2: Tabulating and Analyzing Social Data (4 q.h.)

Methods of tabulating, presenting, summarizing, and analyzing data. Students will be required to learn elementary descriptive and inferential statistics and how to use them. Statistics as a tool will be emphasized, and students will be introduced to the use of the computer. *Prereq.* SOC 4321 or equiv.

SOC 4323 Social Research Methods 3: Doing Social Research (4 q.h.)

Students will be required to carry out the study they designed in SOC 4322, analyze data, and report results. The ethics and politics of social research will be discussed, as will relations among social action, social research, and theory building. *Prereq.* SOC 4322 or equiv.

SOC 4324 Evaluation of Social Intervention (3 q.h.)

Introduces basic concepts of theory, practice, and evaluation in the human service programs. Specific programs will be critiqued and evaluated from both worker and client perspectives. Funding sources and the role of the community or larger agency will also be examined. Students are encouraged to bring in their own case materials for class discussion.

SOC 4347 Community Analysis (3 q.h.)

Demographic and ecological theories of man's relation to his physical environment. Development of the concept of community and discussion of community study methods. Contrasts between rural communities and urban neighborhoods. Discussion and evaluation of community action programs.

SOC 4348 Seminar in Urban Studies (3 q.h.)

Interdisciplinary approaches to analyses of urban issues, continuing student projects. *Prereq.* One previous course in urban studies field.

SOC 4375 Sociology of Occupations and Professions (3 q.h.)

Analysis of the social relations within occupational groups, of occupational structure, and of institutional aspects of an occupation. Relationships between supervisors, peers, colleagues, subordinates, and clientele; their significance for work-role behavior.

SOC 4376 Sociology of Industry (3 q.h.)

Comparison of pre-industrial and industrial society, stressing the impact of industry on society and the relation between industry, culture, and values. Diversification, specialization, human relations, and formal and informal groups are dealt with.

SOC 4377 Sociology of Formal Organizations: Humans, Machines, and Bureaucracy (3 q.h.)

A study of formal organizations and the principles that govern organizational life. Weber's theory of bureaucracy and the concept of authority; communications systems and other conceptions of formal organizations. The structure of work groups and their effect on the larger organization.

SOC 4470 Sociology of Religion (3 q.h.)

An examination of the role of religious belief systems and institutions in classical and Western societies.

SOC 4800 Directed Study 1 (3 q.h.)

An opportunity for qualified students to take an upper-level course in their major area on an individual basis. Petitions and procedural instructions are available in the office of University College Social Science Programs, 204 Churchill Hall, 617-437-2416.

SOC 4801 Directed Study 2 (3 q.h.)

A second opportunity to initiate individual study as described above. *Prereq.* SOC 4800.

SOC 4805 Field Work in Sociology (6 q.h.)

Refer to page 59 describing field work courses. To be arranged with a department field work adviser prior to registration. *Prereq.* Major in Sociology/Anthropology and completion of 15 credits in Sociology. (Students may receive credit for only one department field work course. Credit for SOC 4805 precludes credits for SOA 4320. Students who are eligible for department Honors courses may take any combination of field work and Honors totaling three courses.)

SOC 4820 Honors Program 1 (4 q.h.)

Independent work in a selected area under the direction of members of the department. *Prereq.* SOC 4323 and SOC 4302, and approval of the Dean. (Students may take any combination of field work and Honors totaling three courses.)

SOC 4821 Honors Program 2 (4 q.h.)

Second opportunity to do independent work as described in SOC 4820. *Prereq.* SOC 4820.

SOC 4822 Honors Program 3 (4 q.h.)

Additional opportunity to do independent work as described in SOC 4820. *Prereq.* SOC 4821.

SPC 4001 Speaking Skills for International Students 1 (3 q.h.)

Beginning-level course designed for persons who have studied or are studying English. Instruction offered in pronunciation and intelligibility for formal and informal situations. Communication skills monitored through use of video and audio tape recordings and work in the language laboratory. Following diagnostic testing, students will participate in individualized small- and large-group instructional situations. Placement tests will be given during the first week of class.

SPC 4002 Speaking Skills for International Students 2 (3 q.h.)

Intermediate-level course designed for persons who have previously studied English but who need to develop additional basic oral communication proficiency. Communication skills monitored through use of video tape and audio tape recordings and work in the language laboratory. Following diagnostic testing, students will participate in individualized small- and large-group instructional situations. Placement tests will be given during the first week of class.

SPC 4003 Speaking Skills for International Students 3 (3 q.h.)

Advanced-level course designed for students who have previously studied English and who can make themselves understood easily, but who have difficulty in purposeful oral communication. Task-oriented interaction, variety of two-person communication situations, and small-group interactions. Progress monitored through use of video and audio tape recordings. Placement tests will be given during the first week of class.

SPC 4101 Effective Communication 1 (formerly Effective Speaking 1) (3 q.h.)

Focus on development of personal communication skills, shaping messages, sending messages, listening, understanding nonverbal cues, trusting, and coping with the barriers to communication, feedback and interaction.

SPC 4102 Effective Communication 2 (formerly Effective Speaking 2) (3 q.h.)

The focus is on small-group communication, elements of group structure, task and maintenance functions by group members, leadership, formalized methods of group problem solving, and decision making. *Prereq.* SPC 4101 or equiv.

SPC 4103 Effective Communication 3 (formerly Effective Speaking 3) (3 q.h.)

The study and application of public communication skills, both as disseminating information and as a catalyst for change; message preparation; information exchange; delivery. Persuasive techniques are emphasized. *Prereq.* SPC 4102 or equiv.

SPC 4104 Effective Communication (Intensive) (6 q.h.)

Equivalent of SPC 4101 and SPC 4102.

SPC 4111 Voice and Articulation 1 (3 q.h.)

Aimed at developing the speaking voice; special emphasis on articulation, pitch control, vocal variety and flexibility; basic theory of the vocal mechanism.

SPC 4112 Voice and Articulation 2 (3 q.h.)

Study of the science of speech sounds, investigation of regionalisms, individual voice development. *Prereq.* SPC 4111 or equiv.

SPC 4113 Oral Interpretation (3 q.h.)

Application of basic vocal techniques to the dramatic interpretation of various forms of literature.

SPC 4150 Self-Concept and Communication (3 q.h.)

Designed to look at ways communication patterns are formed and work in our personal and professional lives. Emphasis on how self-concept affects communication. Using a combination of thinking, feeling, and doing, students can develop awareness of their attitudes and habits and explore alternative communication patterns.

SPC 4151 Listening (3 q.h.)

This course helps students identify their unique listening styles and explore ways in which predominant listening

patterns can become more flexible. Areas to be covered include reasons for poor listening, techniques for effective listening, giving and receiving feedback.

SPC 4152 Interviewing (3 q.h.)

Designed to further the student's understanding of the dynamics of interviews by presenting fundamental communication principles and showing how they apply to the interview process. Examines these principles from the perspective of both the interviewer and the interviewee, helping students to prepare for both roles. Special attention is given to employment, informational counseling, and persuasive interviews.

SPC 4201 Argumentation and Discussion (3 q.h.)

Designed to acquaint the student with the basic concepts of argumentation (evidence, research, refutation). Emphasis is placed on the psychology of an audience and various types of group discussion.

SPC 4202 Parliamentary Procedure (3 q.h.)

Methods of conducting and organizing meetings, development of effective leadership techniques, experience in chairing a meeting and applying rules of order.

SPC 4221 Interpersonal Communications 1 (3 q.h.)

Ways of becoming more aware of one's self and one's relation to others. An exploration of various options for communicating and increasing one's knowledge of the group process (enrollment limited).

SPC 4222 Interpersonal Communications 2 (3 q.h.)

Continuation of SPC 4221. *Prereq.* SPC 4221 or permission of instructor.

SPC 4223 Interpersonal Communications 3 (3 q.h.)

Continuation of SPC 4222. *Prereq.* SPC 4222 or permission of instructor.

SPC 4231 Female/Male Communication 1 (3 q.h.)

Analyzes the ways in which female/male relations are created, maintained, developed, or disintegrated through communications. The influence of family, friends, the media, and "significant others" in sustaining stereotypes for both sexes; the impact of such stereotyping on the self and effective communication. The use of verbal and nonverbal communications to understand the types of relationships between men and women, how different male/female language styles and usage affect these relations.

SPC 4232 Female/Male Communication 2 (3 q.h.)

Discusses interaction and transactional approaches to analyzing existing relations and their communication. Provides the opportunity to develop skills in diagnosing communication transactions and in developing strategies for successful or effective communication. The influence of supportive and defensive environments and the communication behaviors of each are examined and applied to strategies for improving relationships between males and females. *Prereq.* SPC 4231 or permission of instructor.

SPC 4233 Female/Male Communication 3 (3 q.h.)

Problems and issues in male/female communication. Various settings (job or work environment, industry, health professions, education, family, legal) are used, and the problems and issues of male/female interactions through communication are examined. Issues and problems from participants' own experience, as well as case studies, are included. *Prereq.* SPC 4232 or permission of instructor.

SPC 4251 Business and Professional Speaking (3 q.h.)

Practice in the organization and presentation of material to fit varying audiences. Emphasis on techniques of delivery and effective presentation of ideas.

SPC 4261 Oral Collaboration (3 q.h.)

Opportunity for development of interviewing skills as a data acquisition technique. Effective questioning techniques to probe for technical information. How to interact with consultants, in formal and informal settings, for maximum benefit; make oral presentations and establish credibility among professional peers; participate in meetings for maximum productivity and effective technical group interaction.

TCC 4101 Technical Writing 1 (3 q.h.)

Introduces the history and principles of technical writing. Designed to improve basic technical writing skills by providing practice in basic descriptive writing, writing definitions, and preparing outlines and abstracts. The course provides practice in improving research skills with a guided library research project in the field of technical writing. Considerable writing practice is provided.

TCC 4102 Technical Writing 2 (3 q.h.)

Provides exposure to and practice in various types of technical writing, including descriptions of objects, mechanisms, and processes. Designed to develop a student's capability to prepare various types of reports, including progress reports, recommendations, and oral reports. Introduces the preparation of proposals and use of graphic aids in supporting the writing process. Considerable writing practice is provided. *Prereq.* TCC 4101.

TCC 4103 Technical Writing (Intensive) (6 q.h.)

Equivalent to TCC 4101 and TCC 4102.

TCC 4105 Editing for Science and Technology (3 q.h.)

This course teaches the fundamentals of editing as they apply to scientific, technical, and engineering writing. It covers the role of the editor in business, industry, and the sciences; basic editorial services—proofreading, copy and content editing, production editing, project editing; analyzing and critiquing manuscripts; working with authors; the editor as writer and interviewer; science interpretation and technical translation. Learning is enhanced for students already skilled in spelling and grammar. *Prereq.* TCC 4101 or permission of instructor.

TCC 4301 Computer Software Technical Writing 1 (3 q.h.)

Part one of a two-quarter course designed to introduce the tasks and problems unique to software technical writing. Major topics include review of fundamental software concepts, role and importance of software documentation, component parts of software technical manuals and their purposes, tutorial and reference functions of manuals, research tools for manual writing, and the writing process itself. *Prereq.* TCC 4101 and MIS 4102 or permission of instructor.

TCC 4302 Computer Software Technical Writing 2 (3 q.h.)

Continuation of TCC 4301. *Prereq.* TCC 4301.

TCC 4311 Hardware Technical Manual Writing 1 (3 q.h.)

Introduces individuals who are competent in appropriate technical fields to the theory and practice of documenting the installation, operation, theory, and maintenance of electronic instruments and systems for industrial, aerospace, military, and medical applications. *Prereq.* TCC 4102 or permission of instructor.

TCC 4312 Hardware Technical Manual Writing 2 (3 q.h.)

Continuation of TCC 4311, with special attention to developing the skills appropriate to writing each of the sections normally comprising an electronic instrument operating manual. Includes problems in organizing a typical manual, presentation of technical theory, maintenance procedures, test and adjustment procedures, and procedures for updating manuals as well as cataloging replaceable parts. *Prereq.* TCC 4311.

TCC 4320 Proposal Writing (3 q.h.)

Provides a background in the preparation of proposals, including ability to analyze a request for proposal (or bid set). Introduces the various types of proposals generated by industry and provides an opportunity to prepare a proposal in a simulated situation, through role playing and participation on a proposal preparation team. Considerable analysis and writing practice is provided. *Prereq.* TCC 4102 or permission of instructor.

TCC 4330 The Business and Technical Presentation (3 q.h.)

Application of the principles of technical communication to audiovisual presentations. Includes audience analysis, techniques of organization, script preparation, media selection, the design and production of visuals, the influence of physical factors on communication, and the elements of effective video playback and peer critiques.

TCC 4350* Concepts of Modern Technology 1 (3 q.h.)

A survey of the applications of physical science to mechanical devices. An introduction to the laws of thermodynamics. The influence of material properties on design and manufacturing techniques. *Prereq.* MTH 4082.

TCC 4351* Concepts of Modern Technology 2 (3 q.h.)

A survey of the application of physical science to electrical and electronic devices. An introduction to electronic circuit design. A comparison of various devices used for amplification and control. A study of the development of the electronic digital computer and the components involved in the manufacture of computers. *Prereq.* TCC 4350.

TCC 4352* Measurement and Analysis (3 q.h.)

A survey of instruments and techniques used to assure performance of electrical and mechanical components. An introduction to trouble-shooting and automated testing. A study of destructive and nondestructive tests and their relationship to each other. *Prereq.* TCC 4351.

TCC 4353* Modern Electronics (3 q.h.)

A survey of components available to the designer of electronic devices, including linear integrated circuits and digital building blocks. Topics discussed will include: operational amplifier characteristics; truth tables and the synthesis of digital logic; logic families and specifications; counters, registers and decoding; digital instruments, digital to analog conversion.

TCC 4354* Theory and Operation of Computers (3 q.h.)

An introduction to digital computer design and operation. Design topics include Boolean Algebra, synthesis of switching networks, and an introduction to general computer architecture and organization. Operational topics include input and output devices, systems development, programming tools, data communication, time sharing, data-base principle. *Prereq.* MTH 4082 or equiv.

TRN 4301 Elements of Transportation (3 q.h.)

An introduction to regulatory, economic, and management aspects of transportation from the viewpoint of shippers, government, and carrier management. Topics include: cost, rates, operations, entry, mergers, and intercity passenger carriage. This is a course of general interest to students in business, law, or government.

TRN 4302 Physical Distribution Management (3 q.h.)

An introduction to the physical distribution management concept. Topics include inventory control, warehousing, cost control, and locational strategy. Course uses text and case materials developed from industry situations.

TRN 4305 Traffic Management 1—Rates and Tariffs (3 q.h.)

A practical course in the interpretation and use of tariffs. Topics include classifications, rate scales, tariff rules, rate-making procedures, and ICC law and practice.

*This is a Lincoln College course, offered at a different tuition rate from University College courses.

TRN 4306 Traffic Management 2—Selected Topics (3 q.h.)

Further study of traffic management, covering such topics as routing, claims, insurance, consolidation, and packaging. *Prereq.* TRN 4305.

TRN 4307 Contemporary Issues in Transportation and Distribution (3 q.h.)

Focuses attention on a limited number of topics that are of particular interest during the current academic year.

TRN 4316 Carrier Management (3 q.h.)

Examines the transportation system from the carrier viewpoint. Topics include: managerial response to a heavily regulated and rapidly expanding environment; carrier decision making involving routes, scheduling, financing, and pricing of services.

TRN 4321 Transportation Regulation 1 (3 q.h.)

Examines principal elements of transport regulation, public policy, and the role of federal and state regulatory agencies. Specific attention is given to the types of commerce, carriers, and services subject to regulation; entry and exit requirements, economic and cost considerations, and selective rate and tariff construction rules. Addresses all modes, with stronger emphasis on rail and motor issues.

TRN 4322 Transportation Regulation 2 (3 q.h.)

Examines the regulations and industry practices, covering the performance requirements, liabilities, and responsibilities of shippers, regulated carriers, and exempt forms of transportation. Reviews rules and procedures established by the ICC and Massachusetts DPU, with specific attention directed toward informal and modified procedure cases. *Prereq.* TRN 4321.

TRN 4325 Management of Warehouse Operations (3 q.h.)

A practical course in the management of warehouses. Topics include: site selection, construction, finance, operations, measurement of performance, and warehouse technology.

TRN 4330 Organization and Control of Physical Distribution Management (3 q.h.)

Course reviews the establishment of the firm's physical distribution organization, interrelation with other company functions, and examines advanced physical distribution problems.

TRN 4331 Surface Transportation 1—Railroad Management (3 q.h.)

A management-oriented course that considers the current and future status of the railroads. Topics include: investment and finance, mergers, marketing, labor relations, diversification, and public policy.

TRN 4332 Surface Transportation 2—Motor Carrier Management (3 q.h.)

A management-oriented course that examines the regulated motor carrier industry. Topics include: equipment selection, finance, mergers, marketing, labor relations, routes, operations and control, and public policy.

TRN 4333 Surface Transportation 3—Marine Transportation (3 q.h.)

A management-oriented course that examines the U.S. Merchant Marine. Topics include: international trade patterns, government promotion and regulation, technological innovations, port facilities, and labor relations.

TRN 4334 Surface Transportation 4—Private Trucking (3 q.h.)

A management-oriented course that examines the formation of a private trucking operation. Topics include: legal guidelines, purchase vs. lease, operations, and performance measurement.

TRN 4340 Air Transportation (3 q.h.)

Economics and regulation of air carriage certified by the Civil Aeronautics Board. Topics include: entry, operations, pricing, mergers, cost analysis, and financing.

TRN 4341 Urban Transportation (3 q.h.)

The scope and status of transportation in our metropolitan area. Examines the planning and financing of urban transportation systems; the role of local, state, and federal government units; and the problems of transit management.

TRN 4342 Transportation Loss, Damage, and Other Claims (3 q.h.)

Comprehensive review and examination of the rules, regulations, and pertinent elements of transportation claims resulting from the loss or damage of cargo, overcharges and undercharges, and related carrier and shipper activities.

TRN 4350 International Transportation and Distribution Management (3 q.h.)

Review of United States role in international transportation. Emphasis is placed on the industry structure of two primary modes of international transportation, aviation and maritime. Also examines the major indirect supporting businesses and/or agencies involved in the international movement of people and goods.

TRN 4351 Case Studies in Transportation Regulation 1 (3 q.h.)

An intensive study course directed toward review and understanding of pertinent areas of transportation regulation and economics. Involves preparation of selected cases dealing with many areas of traffic law to develop understanding of the Interstate Commerce Act and related statutes.

TRN 4352 Case Studies in Transportation Regulation 2 (3 q.h.)

Continuation of TRN 4351. *Prereq.* TRN 4351.

TRN 4353 Case Studies in Transportation Regulation 3 (3 q.h.)

Continuation of TRN 4352. *Prereq.* TRN 4352.

Glossary of New Course Numbers

As of the 1984–1985 academic year, Northeastern University instituted a new course numbering system that applies to all courses in the University. The following is a convenient course number conversion guide to aid you in understanding these important changes.

Continuing students: Please be advised that it is your responsibility to avoid registering for courses you have already taken but which now have new course numbers.

New Course No.	Course Title	Q.H.	Old Course No.
ACC 4101	Accounting Principles 1	3	41.301
ACC 4102	Accounting Principles 2	3	41.302
ACC 4103	Accounting Principles 3	3	41.303
ACC 4105	Accounting Principles 1 and 2 (Intensive)	6	41.304
ACC 4110	Management Accounting for Nonprofit Organizations	3	41.315
ACC 4120	Essentials of Personal Income Taxation	3	41.420
ACC 4301	Intermediate Accounting 1	3	41.401
ACC 4302	Intermediate Accounting 2	3	41.402
ACC 4303	Intermediate Accounting 3	3	41.403
ACC 4304	Intermediate Accounting 4	3	41.407
ACC 4306	Intermediate Accounting 1 and 2 (Intensive)	6	41.404
ACC 4310	Cost Accounting 1	3	41.405
ACC 4311	Cost Accounting 2	3	41.406
ACC 4312	Cost Accounting 1 and 2 (Intensive)	6	41.421
ACC 4320	Advanced Accounting 1	3	41.408
ACC 4321	Advanced Accounting 2	3	41.409
ACC 4325	Auditing 1	3	41.412
ACC 4326	Auditing 2	3	41.413
ACC 4327	Auditing 1 and 2 (Intensive)	6	41.414
ACC 4330	Internal Auditing 1	3	41.417
ACC 4331	Internal Auditing 2	3	41.418
ACC 4340	Federal Income Taxes 1	3	41.415
ACC 4341	Federal Income Taxes 2	3	41.416
ACC 4342	Federal Income Taxes 3	3	41.422
ACC 4350	Seminar in Contemporary Accounting Problems 1	3	41.410
ACC 4351	Seminar in Contemporary Accounting Problems 2	3	41.411
ART 4100	History of Art	3	27.304
ART 4101	History of Art to the Sixteenth Century	3	27.305
ART 4102	History of Art to the Twentieth Century	3	27.306
ART 4106	Introduction to Art	3	27.301
ART 4107	Introduction to the Great Museums of Europe	3	27.313
ART 4121	Principles of Drawing and Composition	3	27.341
ART 4122	Introduction to Figure Drawing	3	27.342
ART 4123	Drawing Workshop	3	27.343
ART 4127	Basic Painting	3	27.351
ART 4128	Intermediate Painting	3	27.352
ART 4129	Painting Workshop	3	27.353
ART 4130	Printmaking—Relief	3	27.344
ART 4131	Printmaking—Silkscreen	3	27.345
ART 4132	Printmaking—Intaglio	3	27.346
ART 4133	Basic Color and Design	3	27.361
ART 4134	Color and Design Practice	3	27.362
ART 4135	Contemporary Design	3	27.363
ART 4136	Basic Watercolor Painting	3	27.375
ART 4137	Watercolor Painting Practice	3	27.376
ART 4138	Techniques of Watercolor Painting	3	27.377
ART 4140	Graphic Communication and Production	3	27.420

New Course No.	Course Title	Q.H.	Old Course No.
ART 4141	Graphic Design 1	3	27.425
ART 4142	Graphic Design 2	3	27.426
ART 4143	Advertising Design	3	27.427
ART 4160	Basic Photography 1	3	27.440
ART 4161	Basic Photography 2	3	27.441
ART 4162	Photography Workshop	3	27.442
ART 4204	Italian Renaissance Art	3	27.320
ART 4207	Chinese Painting	3	27.338
ART 4208	Japanese Art	3	27.339
ART 4210	French Painting	3	27.322
ART 4213	Modern Painting	3	27.315
ART 4214	Contemporary Painting	3	27.316
ART 4217	Latin American Art	3	27.307
ART 4218	Mexican Art	3	27.308
ART 4219	American Indian Art	3	27.309
ART 4220	American Painting and Sculpture	3	27.324
ART 4221	Women in Art and Women Artists	3	27.310
ART 4223	American Architecture	3	27.325
ART 4228	Twentieth-Century Architecture	3	27.326
ART 4229	The Arts in Boston	3	27.393
ART 4230	History of Photography	3	27.387
ART 4231	Contemporary Photography	3	27.389
ART 4251	Advanced Graphic Design	3	27.428
ART 4255	Figure Drawing Workshop	3	27.350
ART 4311	New York Art Seminar	3	27.392
ART 4312	European Art Seminar	3	27.394
ART 4364	Design and Production of Promotional Publications	3	27.421
ART 4365	Design and Production of Technical Publications	3	27.422
ART 4800	Directed Study 1	3	27.395
ART 4801	Directed Study 2	3	27.396
ART 4810	Honors Program 1	4	27.400
ART 4811	Honors Program 2	4	27.401
ART 4812	Honors Program 3	4	27.402
ASL 4101	American Sign Language 1	4	36.401
ASL 4102	American Sign Language 2	4	36.402
ASL 4201	Intermediate American Sign Language 1	4	36.403
ASL 4202	Intermediate American Sign Language 2	4	36.404
ASL 4401	American Sign Language Literature	4	
ASL 4402	American Deaf Culture	4	36.406
ASL 4403	Deaf History	4	
ASL 4404	Linguistics of American Sign Language	4	36.405
ASL 4501	Sign Language Interpreting 1	4	36.407
ASL 4502	Sign Language Interpreting 2	4	36.408
ASL 4503	Sign Language Interpreting 3	4	36.409
ASL 4504	Practicum in Sign Language Interpreting 1	4	36.410
ASL 4505	Practicum in Sign Language Interpreting 2	4	36.411
ASL 4506	Practicum in Sign Language Interpreting 3	4	36.412
ASL 4507	Sign Language Interpreting Seminar	1	
ASL 4508	Sign Language Interpreting Seminar	1	
ASL 4509	Sign Language Interpreting Seminar	1	
ASL 4510	Sign Language Interpreting Seminar	1	
BIO 4103	Biology 1 (General)	4	18.411
BIO 4104	Biology 2 (Animal)	4	18.412
BIO 4105	Biology 3 (Animal)	4	18.413
BIO 4133	Plant Biology	4	18.419
BIO 4175	Human Anatomy and Physiology 1	3	18.424
BIO 4176	Human Anatomy and Physiology 2	3	18.425
BIO 4177	Human Anatomy and Physiology 3	3	18.426
BIO 4185	Man and His Biosphere 1	3	18.464

New Course No.	Course Title	Q.H.	Old Course No.
BIO 4186	Man and His Biosphere 2	3	18.465
BIO 4190	Microbiology 1	3	18.421
BIO 4191	Microbiology 2	3	18.422
BIO 4192	Microbiology 3	3	18.423
BIO 4224	Ecology 1	3	18.461
BIO 4225	Ecology 2	3	18.462
BIO 4226	Ecology 3	3	18.463
BIO 4235	Genetics 1	3	18.457
BIO 4236	Genetics 2	3	18.458
BIO 4237	Genetics Laboratory	2	18.459
BIO 4246	Cell Biology 1	3	18.431
BIO 4247	Cell Biology 2	3	18.432
BIO 4248	Cell Biology Laboratory	2	18.433
BIO 4258	Advanced Human Physiology 1	3	18.474
BIO 4259	Advanced Human Physiology 2	3	18.475
BIO 4295	Gross Anatomy and General Physiology 1	3	18.407
BIO 4296	Gross Anatomy and General Physiology 2	3	18.408
BIO 4297	Gross Anatomy and General Physiology 3	3	18.409
BIO 4320	Medical Microbiology	4	18.420
BIO 4336	Horticulture	3	18.430
BIO 4350	Histology-Organology 1	2	18.451
BIO 4351	Histology-Organology 2	2	18.452
BIO 4352	Histology-Organology 3	2	18.453
BIO 4436	Advanced Horticulture	3	18.435
BIO 4461	Immunology	4	18.438
BIO 4801	Independent Study in Biology	4	
BL 4101	Law 1	3	49.301
BL 4102	Law 2	3	49.302
BL 4103	Law 3	3	49.305
BL 4105	Law (Intensive)	6	49.303
BL 4115	Law and Social Issues	3	49.304
BL 4120	Law for Personal Planning	3	49.306
CHM 4101	Modern Chemistry 1	3	12.407
CHM 4102	Modern Chemistry 2	3	12.408
CHM 4103	Modern Chemistry 3	3	12.409
CHM 4105	Chemistry and the Environment	3	12.450
CHM 4110	Chemistry Workshop	0	12.460
CHM 4111	General Chemistry 1	3	12.444
CHM 4112	General Chemistry 2	3	12.445
CHM 4113	General Chemistry 3	3	12.446
CHM 4221	Analytical Chemistry 1	3	12.421
CHM 4222	Analytical Chemistry 2	3	12.422
CHM 4223	Analytical Chemistry 3	3	12.423
CHM 4224	Analytical Chemistry	4	12.427
CHM 4261	Organic Chemistry 1	4	12.431
CHM 4262	Organic Chemistry 2	4	12.432
CHM 4263	Organic Chemistry 3	4	12.433
CHM 4321	Instrumental Analysis 1	3	12.451
CHM 4322	Instrumental Analysis 2	3	12.452
CHM 4323	Radiochemistry	3	12.453
CHM 4371	Biochemistry 1	3	12.415
CHM 4372	Biochemistry 2	3	12.416
CHM 4373	Biochemistry 3	3	12.417
CHM 4381	Physical Chemistry 1	3	12.441
CHM 4382	Physical Chemistry 2	3	12.442
CHM 4383	Physical Chemistry 3	3	12.443
CHM 4454	Introduction to Polymer Chemistry	3	12.454
CHM 4801	Independent Study in Chemistry	3	
DRA 4101	Introduction to Theatre	3	29.311

New Course No.	Course Title	Q.H.	Old Course No.
DRA 4110	Theatre Management	3	29.310
DRA 4130	Prizewinning Plays	3	29.320
DRA 4140	Workshop for the Actor 1	3	29.341
DRA 4141	Workshop for the Actor 2	3	29.342
DRA 4142	Workshop for the Actor 3	3	29.343
DRA 4150	Introductory Mime Workshop	3	29.338
DRA 4160	Drama and Movement Therapy	3	29.344
DRA 4170	Creative Dramatics for Teachers	3	29.345
DRA 4200	The Comic Theatre	3	29.350
DRA 4210	The Shakespeare Experience	3	29.394
DRA 4230	The Boston Theatre Scene	3	29.395
DRA 4240	The Creative Cinema	3	29.380
DRA 4350	Advanced Mime Workshop	3	29.339
ECN 4115	Economic Principles and Problems 1	3	39.301
ECN 4116	Economic Principles and Problems 2	3	39.302
ECN 4117	Economic Principles and Problems 3	3	39.303
ECN 4118	Economics (Intensive)	9	39.304
ECN 4130	Medical Economics	3	39.341
ECN 4140	Economics of Crime	3	39.342
ECN 4150	Economics of World Energy and Primary Resources	3	39.352
ECN 4155	Superpower Economics	3	39.353
ECN 4215	Macroeconomic Theory	3	39.308
ECN 4216	Microeconomic Theory	3	39.307
ECN 4250	Statistics 1	3	39.311
ECN 4251	Statistics 2	3	39.312
ECN 4252	Statistics 3	3	39.313
ECN 4253	Statistics (Intensive)	9	39.314
ECN 4310	Labor Economics	3	39.327
ECN 4311	Human Resource Planning	3	39.357
ECN 4315	Income Inequality and Discrimination	3	39.343
ECN 4321	Urban Economic Problems and Policies	3	39.361
ECN 4322	Economics of Transportation	3	39.354
ECN 4323	Economics of the Quality of Urban Environment and Control	3	39.355
ECN 4330	Economic Growth and Development	3	39.321
ECN 4331	American Economic History	3	39.325
ECN 4333	European Economic Development	3	39.322
ECN 4334	Comparative Economic Systems	3	39.330
ECN 4335	International Economics 1	3	39.328
ECN 4336	International Economics 2	3	39.329
ECN 4342	Money and Banking 1	3	39.317
ECN 4343	Money and Banking 2	3	39.318
ECN 4344	Government Finance	3	39.319
ECN 4345	Business Cycles 1	3	39.331
ECN 4346	Business Cycles 2	3	39.332
ECN 4347	Business Cycles 3	3	39.333
ECN 4348	Business Cycles (Intensive)	9	39.334
ECN 4350	Introduction to Econometrics	3	39.336
ECN 4351	Problems in Economic Research	3	39.337
ECN 4353	Introduction to Mathematical Economics	3	39.309
ECN 4360	Managerial Economics	3	39.339
ECN 4362	Industrial Organization and Public Policy	3	39.351
ECN 4363	Government and Business 1	3	39.323
ECN 4364	Government and Business 2	3	39.324
ECN 4365	Government and Business 3	3	39.326
ECN 4490	Directed Study 1	3	39.491
ECN 4491	Directed Study 2	3	39.492
ECN 4492	Economic Policy Seminar	3	39.381
ECN 4495	Honors Program 1	4	39.391
ECN 4496	Honors Program 2	4	39.392

New Course No.	Course Title	Q.H.	Old Course No.
ECN 4497	Honors Program 3	4	39.393
EMS 4107	EMT—Basic	9	86.403
ENG 4005	English for International Students 1	0	30.301
ENG 4006	English for International Students 2	0	30.302
ENG 4007	Advanced English for International Students	3	30.325
ENG 4009	Fundamentals of English 1	4	30.400
ENG 4010	Fundamentals of English 2	4	30.402
ENG 4011	Elements of Writing	3	30.304
ENG 4110	English 1	3	30.305
ENG 4111	English 2	3	30.306
ENG 4112	English 3	3	30.307
ENG 4120	English Literature to 1700	3	30.341
ENG 4121	English Literature: Reason and Romanticism	3	30.342
ENG 4122	English Literature: Victorians and Moderns	3	30.343
ENG 4123	Early American Literature: Faith, Reason, and Nature	3	30.344
ENG 4124	American Romantics and American Realists	3	30.345
ENG 4125	American Literature: The Modern Temper	3	30.346
ENG 4126	The Ancient and Medieval Worlds	3	30.453
ENG 4127	From the Renaissance to Romanticism	3	30.454
ENG 4128	From Realism to Modernism	3	30.455
ENG 4210	Science Fiction	3	30.347
ENG 4211	Fantasy Literature	3	30.330
ENG 4212	Horror Fiction	3	30.324
ENG 4213	Detective Fiction	3	30.366
ENG 4214	The Psychological Novel	3	30.328
ENG 4220	Children's Literature	3	30.329
ENG 4221	Images of Women in Literature	3	30.348
ENG 4222	American Women Writers	3	30.349
ENG 4223	British Women Writers	3	30.350
ENG 4230	Modern Irish Literature	3	30.338
ENG 4231	Irish Writers in America	3	30.339
ENG 4232	Ethnic Literature in America	3	30.380
ENG 4233	Outside the Mainstream: The Literature of America's Subcultures	3	30.388
ENG 4234	Modern American Voices: The New Essayists	3	30.389
ENG 4240	Fiction and the Movies	3	30.327
ENG 4250	The Biography and Non-Fiction	3	30.470
ENG 4349	Expository and Persuasive Writing 1	3	30.308
ENG 4350	Expository and Persuasive Writing 2	3	30.309
ENG 4352	Expository Communications	3	30.310
ENG 4357	Creative Writing: Poetry	3	30.318
ENG 4358	Creative Writing: Fiction	3	30.317
ENG 4359	Creative Writing Workshop	3	30.319
ENG 4362	Book Publishing	3	30.326
ENG 4380	Business Writing and Reports 1	3	30.311
ENG 4381	Business Writing and Reports 2	3	30.312
ENG 4383	Business Writing and Reports (Intensive)	6	30.313
ENG 4500	The English Language	3	30.320
ENG 4501	Linguistics	3	30.321
ENG 4502	Semantics	3	30.322
ENG 4602	Major Figures in Poetry	3	30.451
ENG 4603	Major Figures in Fiction	3	30.452
ENG 4610	The American Short Story	3	30.381
ENG 4611	The American Novel	3	30.390
ENG 4612	Contemporary American Poetry	3	30.384
ENG 4637	Faith and Science: The Seventeenth Century	3	30.357
ENG 4638	Order and Disorder: The Eighteenth Century	3	30.461
ENG 4639	Romantics and Victorians: The Nineteenth Century	3	30.462
ENG 4640	The Twentieth Century	3	30.373
ENG 4641	Contemporary English Poetry	3	30.387
ENG 4642	The English Novel	3	30.463

New Course No.	Course Title	Q.H.	Old Course No.
ENG 4649	European and English Short Story	3	30.340
ENG 4650	Modern Bestsellers	3	30.385
ENG 4651	The Continental Novel	3	30.464
ENG 4658	Shakespeare the Dramatist	3	30.450
ENG 4659	Shakespeare: The Major Tragedies and Comedies	3	30.456
ENG 4800	Directed Study 1	3	30.395
ENG 4801	Directed Study 2	3	30.396
ENG 4802	English Honors 1	4	30.391
ENG 4803	English Honors 2	4	30.392
ENG 4804	English Honors 3	4	30.393
ESC 4100	Earth Sciences 1	3	16.301
ESC 4101	Earth Sciences 2	3	16.302
ESC 4102	Earth Sciences 3	3	16.303
ESC 4109	Earth Sciences (Intensive)	9	16.304
ESC 4159	Observational Astronomy	3	16.354
ESC 4200	Principles of Geology 1	3	16.324
ESC 4201	Principles of Geology 2	3	16.325
ESC 4202	Principles of Geology 3	3	16.326
ESC 4215	Principles of Oceanology 1	3	16.331
ESC 4216	Principles of Oceanology 2	3	16.332
ESC 4217	Principles of Oceanology 3	3	16.333
ESC 4230	Principles of Meteorology 1	3	16.341
ESC 4231	Principles of Meteorology 2	3	16.342
ESC 4232	Principles of Meteorology 3	3	16.343
ESC 4245	Principles of Astronomy 1	3	16.351
ESC 4246	Principles of Astronomy 2	3	16.352
ESC 4247	Principles of Astronomy 3	3	16.353
ESC 4275	Principles of Conservation 1	3	16.371
ESC 4276	Principles of Conservation 2	3	16.372
ESC 4277	Principles of Conservation 3	3	16.373
ESC 4301	Descriptive Mineralogy	3	16.327
ESC 4302	Igneous and Metamorphic Petrology	3	16.328
ESC 4303	Sedimentary Petrology	3	16.329
ESC 4330	Fisheries Oceanology 1	3	16.334
ESC 4331	Fisheries Oceanology 2	3	16.335
ESC 4332	Marine Resources	3	16.336
ESC 4390	Solar System Astronomy	3	16.355
ESC 4391	Celestial Astronomy 1	3	16.356
ESC 4392	Celestial Astronomy 2	3	16.357
ESC 4420	Conservation and the Nation	3	16.374
ESC 4421	Conservation and the Community	3	16.375
ESC 4422	Conservation Management	3	16.376
ESC 4650	History of Ancient World Sciences and Technologies	3	16.311
ESC 4651	History of Modern World Sciences and Technologies	3	16.312
ESC 4801	Independent Study in Earth Science	3	
FI 4101	Personal Finance	3	44.321
FI 4105	Consumer Finance	3	44.333
FI 4301	Principles of Finance	3	44.301
FI 4302	Financial Management 1	3	44.310
FI 4303	Financial Management 2	3	44.311
FI 4304	Financial Management (Intensive)	6	44.331
FI 4305	Advanced Financial Management	3	44.320
FI 4310	Investment Principles	3	44.312
FI 4311	Investment Management	3	44.313
FI 4312	Investments (Intensive)	6	44.332
FI 4313	Seminar in Investments	3	44.324
FI 4314	Advanced Investment Management	3	44.322
FI 4320	Credit Principles	3	44.314
FI 4321	Credit Management	3	44.315

New Course No.	Course Title	Q.H.	Old Course No.
FI 4325	Budgeting and Planning	3	44.316
FI 4326	Financial Control	3	44.317
FI 4330	Management of Financial Institutions 1	3	44.318
FI 4331	Management of Financial Institutions 2	3	44.319
FI 4350	International Finance 1	3	44.328
FI 4351	International Finance 2	3	44.329
FI 4360	Commodities and Futures Markets	3	44.350
FI 4362	Seminar in Finance	3	44.323
FI 4380	Personal Financial Management 1	3	44.325
FI 4381	Personal Financial Management 2	3	44.326
FI 4382	Personal Financial Management (Intensive)	6	44.327
HMG 4100	Hospital Organization and Management 1	3	86.307
HMG 4101	Hospital Organization and Management 2	3	86.308
HMG 4200	Health Science Statistics	3	86.305
HMG 4210	Medical Care and Current Social Problems 1	3	86.333
HMG 4211	Medical Care and Current Social Problems 2	3	86.334
HMG 4215	Hospital Law and Ethics	3	86.306
HMG 4300	Home Health Care	3	86.328
HMG 4301	Health Care Delivery Systems	3	86.325
HMG 4310	Principles and Practices of Community Health 1	3	86.320
HMG 4311	Principles and Practices of Community Health 2	3	86.321
HMG 4400	Health Care Financial Management 1	3	86.348
HMG 4401	Health Care Financial Management 2	3	86.349
HMG 4425	Applied Health Care Management 1	3	86.310
HMG 4426	Applied Health Care Management 2	3	86.311
HMG 4430	Communications for Health Care Personnel 1	3	86.312
HMG 4431	Communications for Health Care Personnel 2	3	86.313
HMG 4550	Contemporary and Controversial Health Care Issues 1	3	86.326
HMG 4551	Contemporary and Controversial Health Care Issues 2	3	86.327
HMG 4600	Long-Term Care Administration 1	6	86.440
HMG 4601	Long-Term Care Administration 2	6	86.441
HMG 4602	Long-Term Care Administration 3	6	86.442
HMG 4610	Principles and Practices of Community Mental Health	3	86.322
HRA 4302	Medical Terminology Survey	3	86.300
HRA 4305	Medical Terminology 1	2	86.301
HRA 4306	Medical Terminology 2	2	86.302
HRA 4308	Hospital Management for Medical Record Administrators	3	86.362
HRA 4310	Medical Record Science 1	6	86.370
HRA 4311	Medical Record Science 2	6	86.371
HRA 4312	Medical Record Science 3	6	86.372
HRA 4313	Medical Record Science 4	6	86.373
HRA 4314	Medical Record Science 5	6	86.374
HRA 4320	Organization of the Medical Record Department 1	3	86.353
HRA 4321	Organization of the Medical Record Department 2	3	86.354
HRA 4324	Applied Medical Record Science 1	2	86.375
HRA 4325	Applied Medical Record Science 2	3	86.360
HRA 4326	Applied Medical Record Science 3	4	86.367
HRA 4330	Medical Record Computer Science	3	86.358
HRA 4332	Topics in Health Records	3	86.368
HRM 4301	Organizational Behavior	3	49.440
HRM 4302	Introduction to Human Resources Management	3	49.441
HRM 4303	Applied Human Resources Management	3	49.442
HRM 4304	Organizational Behavior and Introduction to Human Resources Management (Intensive)	6	49.443
HRM 4310	Personnel Management 1	3	49.404
HRM 4311	Personnel Management 2	3	49.405
HRM 4313	Personnel Management (Intensive)	6	49.415
HRM 4320	Techniques of Employee Selection	3	49.407
HRM 4321	Wage and Salary Administration	3	49.408

New Course No.	Course Title	Q.H.	Old Course No.
HRM 4322	Employee Benefits	3	49.409
HRM 4323	Job Evaluation	3	49.410
HRM 4324	Creative Problem Solving	3	49.411
HRM 4330	Employment Rights 1—Wage and Hour Law	3	49.432
HRM 4331	Employment Rights 2—Health, Safety, Disability and Workers Compensation Law	3	49.433
HRM 4332	Employment Rights 3—Fair Employment Law	3	49.434
HRM 4340	Public Sector Collective Bargaining in the United States	3	49.429
HRM 4341	Private Sector Collective Bargaining in the United States	3	49.430
HRM 4345	International Labor Relations	3	49.431
HRM 4346	Workshop in Labor/Management Relations	3	49.428
HSC 4210	Basic Nutrition	3	86.380
HSC 4220	Basic Pharmacology	3	86.381
HSC 4301	Foundations of Medical Science 1	3	86.303
HSC 4302	Foundation of Medical Science 2	3	86.304
HSC 4310	Public Health 1	3	86.323
HSC 4311	Public Health 2	3	86.324
HSC 4315	Environmental Problems and Health	3	86.329
HSC 4320	Health Science Education 1	3	86.330
HSC 4321	Health Science Education 2	3	86.331
HSC 4600	Advanced Nutrition	3	86.346
HSC 4601	Advanced Pharmacology	3	86.347
HSC 4602	Methods and Materials in Public Health Education	3	86.332
HSC 4610	Geriatric Nutrition	3	
HSC 4613	Oral Microbiology	3	86.337
HSC 4614	Advanced Periodontology 1	3	86.338
HSC 4615	Advanced Periodontology 2	3	86.339
HSC 4801	Special Topics in the Health Professions 1	3	86.363
HSC 4802	Special Topics in the Health Professions 2	3	86.364
HSC 4803	Special Topics in the Health Professions 3	3	86.365
HSC 4804	Special Topics in the Health Professions 4	3	86.366
HST 4101	History of Civilization 1	3	23.301
HST 4102	History of Civilization 2	3	23.302
HST 4103	History of Civilization 3	3	23.303
HST 4110	History of Civilization A	4	23.309
HST 4111	History of Civilization B	4	23.310
HST 4201	American History 1	3	23.304
HST 4202	American History 2	3	23.305
HST 4203	American History 3	3	23.306
HST 4241	The Historian's Craft	3	23.300
HST 4263	Oral History	3	23.400
HST 4301	Technological Transformation of Society	3	23.407
HST 4302	History of Flight and Space	3	23.415
HST 4303	History of the Automobile	3	23.406
HST 4304	History of Energy	3	23.408
HST 4305	Health and Sickness: Historical Perspectives	3	23.319
HST 4360	History of the Olympics	3	93.360
HST 4401	Ancient Middle East	3	23.321
HST 4403	History of the Jews 1	3	23.333
HST 4404	History of the Jews 2	3	23.334
HST 4407	Ancient Greece	3	23.322
HST 4408	Ancient Rome	3	23.323
HST 4410	The Middle Ages	3	23.328
HST 4411	Byzantine History	3	23.330
HST 4412	Islamic History	3	23.331
HST 4413	Ottoman History	3	23.332
HST 4420	Renaissance and Reformation	3	23.340
HST 4423	Europe, 1789–1870	3	23.342
HST 4424	Europe, 1870–1921	3	23.346

New Course No.	Course Title	Q.H.	Old Course No.
HST 4425	Europe since 1921	3	23.347
HST 4430	European Social and Economic History to 1000	3	23.324
HST 4431	European Social and Economic History, 1000–1648	3	23.325
HST 4432	European Social and Economic History since 1648	3	23.359
HST 4433	Population in History	3	23.320
HST 4434	Family History	3	23.410
HST 4435	Women in European History	3	23.316
HST 4436	European Colonialism	3	23.412
HST 4437	European Urban History Since 1750	3	23.318
HST 4443	European Intellectual History Since 1815	3	23.339
HST 4450	England to 1660	3	23.350
HST 4451	England since 1660	3	23.351
HST 4455	Ireland since 1800	3	23.357
HST 4460	Hitler's Germany	3	23.411
HST 4465	History of Eastern Europe 1	3	23.336
HST 4466	History of Eastern Europe 2	3	23.337
HST 4467	Russia to 1917	3	23.394
HST 4468	Russia since 1917	3	23.396
HST 4469	Russian Expansionism	3	23.413
HST 4501	American Indians	3	23.360
HST 4502	Colonial America	3	23.361
HST 4503	The American Revolution	3	23.363
HST 4511	Populism and Progressivism	3	23.375
HST 4512	The Age of Roosevelt	3	23.376
HST 4513	Contemporary America	3	23.378
HST 4520	Growth of American Government	3	23.366
HST 4523	American Diplomatic History	3	23.367
HST 4525	American Expansionism	3	23.414
HST 4530	American Economic History	3	23.369
HST 4540	American Social History	3	23.368
HST 4542	Women in American History	3	23.315
HST 4543	African-American History	3	23.374
HST 4545	History of the Professions	3	23.403
HST 4546	History of Criminal Justice in America	3	23.405
HST 4547	History of Sport in America	3	23.379
HST 4550	Boston to 1822	3	23.372
HST 4551	Boston since 1822	3	23.373
HST 4602	Contemporary Latin America	3	23.383
HST 4611	Africa since 1885	3	23.389
HST 4622	Modern Middle East	3	23.335
HST 4632	China since 1850	3	23.385
HST 4636	Japan since 1850	3	23.386
HST 4640	Third World Women	3	23.409
HST 4645	History of the Vietnam Wars	3	
HST 4801	Directed Study 1	3	23.491
HST 4802	Directed Study 2	3	23.492
HST 4811	Honors Program 1	4	23.397
HST 4812	Honors Program 2	4	23.398
HST 4813	Honors Program 3	4	23.399
HST 4821	Field Work in History	6	23.499
HTL 4301	Introduction to Hotel and Restaurant Management	3	47.400
HTL 4303	Front Office Management	3	47.406
HTL 4304	Hotel and Restaurant Law	3	47.407
HTL 4305	Food Preparation 1	3	47.410
HTL 4306	Food Preparation 2	3	47.411
HTL 4307	Food Service Engineering and Sanitation	3	47.412
HTL 4308	Food and Beverage Cost Control	3	47.417
HTL 4309	Managerial Accounting for the Hospitality Industry	3	47.423
HTL 4310	Hospitality Marketing Management	3	47.408

New Course No.	Course Title	Q.H.	Old Course No.
HTL 4311	Design and Layout	3	47.409
HTL 4312	Purchasing Methods for Food and Lcdging Industry	3	47.418
HTL 4313	Introduction to Tourism	3	47.419
HTL 4314	Food Science and Technology	3	47.422
HTL 4315	Management Systems for the Hospitality Industry	3	47.405
IM 4301	Production Management 1	3	45.400
IM 4302	Production Management 2	3	45.401
IM 4303	Production Management (Intensive)	6	45.402
IM 4310	Manufacturing Processes	3	45.403
IM 4311	Methods Analysis, Motion and Time Study	3	45.406
IM 4312	Operations Management	3	45.407
IM 4313	Cases in Industrial Management	3	45.409
IM 4314	Production Control and Inventory Management	3	45.410
IM 4315	Industrial Decision Making 1	3	45.411
IM 4316	Industrial Decision Making 2	3	45.412
IM 4317	Materials Management	3	45.414
IM 4318	Economic Analysis in Industry	3	45.420
IM 4319	Value Management	3	45.404
IM 4320	Managing for Results	3	45.419
IM 4321	Management and Operational Control Systems	3	45.421
IM 4340	Manufacturing Seminar 1	3	45.413
IM 4341	Manufacturing Seminar 2	3	45.416
INT 4100	Planning A Business Career	3	90.301
INT 4101	Elements of Management	3	90.310
INT 4102	Women in Business Organizations 1	3	90.305
INT 4103	Women in Business Organizations 2	3	90.306
INT 4110	Self-Assessment and Career Development 1	3	90.401
JRN 4112	Fundamentals of Newswriting	3	38.304
JRN 4113	Newsgathering and Reporting	3	38.305
JRN 4114	News Reporting Techniques	3	38.306
JRN 4250	Interpreting the News	3	
JRN 4300	Photo Journalism	3	38.320
JRN 4335	Public Relations Basics	3	38.330
JRN 4336	Public Relations Practices	3	38.331
JRN 4337	Public Relations Problems	3	38.332
JRN 4349	Advertising Basics	3	38.325
JRN 4574	Newspaper/Magazine Economics and Management	3	38.340
LEN 4100	Criminal Investigation and Case Preparation 1	3	94.304
LEN 4101	Criminal Investigation and Case Preparation 2	3	94.305
LEN 4102	Comparative Police Systems	3	94.306
LEN 4103	Introduction to Industrial Security	3	94.307
LEN 4104	Traffic Safety and Control 1	3	94.314
LEN 4105	Traffic Safety and Control 2	3	94.315
LEN 4106	Police Public Relations	3	94.320
LEN 4107	Police Community Relations	3	94.321
LEN 4108	The Patrol Function 1	3	94.323
LEN 4109	The Patrol Function 2	3	94.324
LEN 4110	Introduction to Criminalistics 1	3	94.325
LEN 4111	Introduction to Criminalistics 2	3	94.326
LEN 4112	The American Correctional System	3	94.327
LEN 4113	Social Deviance 1	3	94.328
LEN 4114	Social Deviance 2	3	94.329
LEN 4115	Correctional Administration 1	3	94.332
LEN 4116	Correctional Administration 2	3	94.333
LEN 4117	Investigative Report Writing	3	94.335
LEN 4118	Police Work with Juveniles	3	94.337
LEN 4119	Delinquency Prevention	3	94.340
LEN 4120	Juvenile Corrections 1	3	94.345
LEN 4121	Juvenile Corrections 2	3	94.346

New Course No.	Course Title	Q.H.	Old Course No.
LEN 4122	Industrial Fire Prevention	3	94.351
LEN 4123	Retail Security	3	94.354
LEN 4124	Bank Security Measures	3	94.355
LEN 4125	Seminar in Security	3	94.356
LEN 4126	Seminar in Correctional Practices	3	94.357
LEN 4127	Current Security Problems	3	94.360
LEN 4128	Seminar in Law Enforcement—Victimology	3	94.365
LEN 4129	Seminar in Law Enforcement—Criminal Behavior	3	94.377
LEN 4130	Seminar in Law Enforcement—Drugs	3	94.383
LEN 4131	Seminar in Law Enforcement—Data Processing	3	94.386
LEN 4132	Administration of Justice 1	3	94.387
LEN 4133	Administration of Justice 2	3	94.388
LEN 4134	Civil Law in Criminal Justice 1	3	94.389
LEN 4135	Civil Law in Criminal Justice 2	3	94.390
LEN 4136	Criminal Law 1	3	94.391
LEN 4137	Criminal Law 2	3	94.392
LEN 4138	Evidence and Court Procedure 1	3	94.393
LEN 4139	Evidence and Court Procedure 2	3	94.394
LEN 4140	Fire Investigation and Arson 1	3	94.395
LEN 4141	Fire Investigation and Arson 2	3	94.396
LEN 4142	Massachusetts Criminal Law	3	94.398
LEN 4143	Alcohol Problems in Law Enforcement	3	94.399
LEN 4144	Security Administration 1	3	94.403
LEN 4145	Security Administration 2	3	94.404
LEN 4146	Hazardous Materials	3	94.405
LEN 4147	Legal Aspects of Security Operations	3	94.406
LEN 4148	Introduction to Government Security Programs	3	94.407
LEN 4149	Logical and Ethical Foundations of Decision Making 1	3	94.410
LEN 4150	Logical and Ethical Foundations of Decision Making 2	3	94.411
LEN 4151	Logical and Ethical Foundations of Decision Making 3	3	94.412
LEN 4152	Domestic Violence	3	94.415
LEN 4153	Criminal Law (Intensive)	6	97.401
LEN 4154	Evidence and Court Procedure (Intensive)	6	97.402
LEN 4155	Civil Law in Criminal Justice (Intensive)	6	97.403
LEN 4156	Traffic Safety and Control (Intensive)	6	97.406
LEN 4157	Introduction to Criminalistics (Intensive)	6	97.408
LEN 4158	Social Deviance (Intensive)	6	97.409
LEN 4159	The Patrol Function (Intensive)	6	97.411
LEN 4160	Criminal Investigation and Case Preparation (Intensive)	6	97.412
LEN 4161	Fire Investigation and Arson (Intensive)	6	97.416
LEN 4162	Correctional Administration (Intensive)	6	97.418
LEN 4163	Administration of Justice (Intensive)	6	97.422
LEN 4164	Logical and Ethical Foundations of Decision Making (Intensive)	9	97.423
LEN 4165	Security Administration (Intensive)	6	97.425
LEN 4300	Human Rights in Corrections	3	94.301
LEN 4301	Basic Statistics in Law Enforcement	3	94.302
LEN 4302	Correctional Counseling	3	94.303
LEN 4303	Interviews and Interrogations 1	3	94.308
LEN 4304	Interviews and Interrogations 2	3	94.309
LEN 4305	Advanced Correctional Practices 1	3	94.311
LEN 4306	Advanced Correctional Practices 2	3	94.312
LEN 4307	Law and Institutional Treatment	3	94.316
LEN 4308	Comparative Correctional Systems	3	94.317
LEN 4309	Law Enforcement Identification and Records 1 (Criminal Histories System)	3	94.318
LEN 4310	Law Enforcement Identification and Records 2 (Criminal Histories System)	3	94.319
LEN 4311	Research Methods in Criminal Justice	3	94.322
LEN 4312	Treatment of Offenders 1	3	94.330

New Course No.	Course Title	Q.H.	Old Course No.
LEN 4313	Treatment of Offenders 2	3	94.331
LEN 4314	Police Supervision	3	94.336
LEN 4315	Criminology 1	3	94.338
LEN 4316	Criminology 2	3	94.339
LEN 4317	Probation and Parole Practices 1	3	94.341
LEN 4318	Probation and Parole Practices 2	3	94.342
LEN 4319	Law Enforcement Management and Planning 1	3	94.343
LEN 4320	Law Enforcement Management and Planning 2	3	94.344
LEN 4321	Document Control	3	94.350
LEN 4322	Physical Security 1	3	94.352
LEN 4323	Physical Security 2	3	94.353
LEN 4324	National Law Enforcement Seminar	3	94.358
LEN 4325	Seminar in Hospital Security	3	94.359
LEN 4326	Law Enforcement Mathematics 1	3	94.361
LEN 4327	Law Enforcement Mathematics 2	3	94.362
LEN 4328	Seminar in Law Enforcement—Youth Crime Control	3	94.364
LEN 4329	Seminar in Law Enforcement—International Crime Control	3	94.366
LEN 4330	Seminar in Law Enforcement—Operational Intelligence	3	94.368
LEN 4331	Seminar in Law Enforcement—Collective Bargaining	3	94.370
LEN 4332	Man, Law, and Society 1	3	94.371
LEN 4333	Man, Law, and Society 2	3	94.372
LEN 4334	Seminar in Law Enforcement—Interviewing Practicum	3	94.374
LEN 4335	Seminar in Law Enforcement—Organized Crime	3	94.375
LEN 4336	Seminar in Law Enforcement—Minorities and the Urban Crisis	3	94.376
LEN 4337	Seminar in Law Enforcement—Prosecution Development	3	94.378
LEN 4338	Seminar in Law Enforcement—Forensic Laboratory	3	94.379
LEN 4339	Seminar in Law Enforcement—Intervention Strategies and Tactics for Law Enforcement Counseling Techniques	3	94.380
LEN 4340	Civil Liberties and the Police 1	3	94.381
LEN 4341	Civil Liberties and the Police 2	3	94.382
LEN 4342	Seminar in Law Enforcement—Executive Development	3	94.384
LEN 4343	Seminar in Law Enforcement—Mental Health and the Police	3	94.385
LEN 4344	Law Enforcement Fiscal Management	3	94.397
LEN 4345	Seminar in Law Enforcement (Grantsmanship) 1	3	94.413
LEN 4346	Seminar in Law Enforcement (Grantsmanship) 2	3	94.414
LEN 4347	Human Behavioral Factors for Security Personnel 1	3	94.501
LEN 4348	Human Behavioral Factors for Security Personnel 2	3	94.502
LEN 4349	Human Behavioral Concepts and Tactics in Police Work 1	3	94.503
LEN 4350	Human Behavioral Concepts and Tactics in Police Work 2	3	94.504
LEN 4351	Corporate Ethics and Crime for the Security Practitioner	3	
LEN 4352	Interviews and Interrogations (Intensive)	6	97.405
LEN 4353	Law Enforcement Identification and Records (Intensive)	6	97.407
LEN 4354	Law Enforcement Management and Planning (Intensive)	6	97.410
LEN 4355	Criminology (Intensive)	6	97.413
LEN 4356	Treatment of Offenders (Intensive)	6	97.414
LEN 4357	Probation and Parole Practices (Intensive)	6	97.415
LEN 4358	Advanced Correctional Practices (Intensive)	6	97.417
LEN 4359	Law Enforcement Mathematics (Intensive)	6	97.419
LEN 4360	Man, Law, and Society (Intensive)	6	97.421
LEN 4361	Physical Security (Intensive)	6	97.424
LEN 4362	Human Behavioral Factors for Security Personnel (Intensive)	6	97.426
LEN 4363	Human Behavioral Concepts and Tactics in Police Work (Intensive)	6	97.427
LEN 4364	Civil Liberties and the Police (Intensive)	6	97.404
LEN 4800	Directed Study (In-Car Seminar)	3	94.500
LEN 4801	Honors Program 1	4	94.400
LEN 4802	Honors Program 2	4	94.401
LEN 4803	Honors Program 3	4	94.402
LEN 4808	Independent Studies 1	3	94.408

New Course No.	Course Title	Q.H.	Old Course No.
LEN 4809	Independent Studies 2	3	94.409
LEN 4899	Field Work in Law Enforcement, Correctional Practices, and Security	6	94.499
LIB 4302	Selection of Library Materials	3	40.302
LIB 4310	Critical Research Tools	3	40.310
LIB 4312	Multi-Media Centers	3	40.312
LIB 4313	Administration of Multi-Media Centers	3	40.313
LIB 4314	Multi-Media Materials and Services	3	40.314
LIB 4321	Introduction to Reference Materials and Methods	3	40.321
LIB 4322	Reference Work in the Social Sciences	3	40.322
LIB 4323	Reference Work in the Humanities	3	40.323
LIB 4325	Business Research Tools	3	40.325
LIB 4331	Descriptive Cataloging	3	40.331
LIB 4332	Subject Headings and Classifications	3	40.332
LIB 4333	Library of Congress Classification	3	40.333
LNA 4101	Elementary Arabic 1	4	34.410
LNA 4102	Elementary Arabic 2	4	34.411
LNA 4103	Elementary Arabic 3	4	34.412
LNF 4101	Elementary French 1	4	31.401
LNF 4102	Elementary French 2	4	31.402
LNF 4103	Elementary French 3	4	31.403
LNF 4104	Intermediate French 1	4	31.404
LNF 4105	Intermediate French 2	4	31.405
LNF 4106	Intermediate French 3	4	31.406
LNF 4231	French Literature 1	3	31.421
LNF 4232	French Literature 2	3	31.422
LNF 4233	French Literature 3	3	31.423
LNF 4801	French Directed Study 1	4	31.495
LNF 4802	French Directed Study 2	4	31.496
LNF 4803	French Directed Study 3	4	31.497
LNG 4101	Elementary German 1	4	33.401
LNG 4102	Elementary German 2	4	33.402
LNG 4103	Elementary German 3	4	33.403
LNG 4104	Intermediate German 1	4	33.404
LNG 4105	Intermediate German 2	4	33.405
LNG 4106	Intermediate German 3	4	33.406
LNG 4801	German Directed Study 1	4	33.495
LNG 4802	German Directed Study 2	4	33.496
LNG 4803	German Directed Study 3	4	33.497
LNH 4101	Beginning Conversational Hebrew 1	4	
LNH 4102	Beginning Conversational Hebrew 2	4	
LNH 4103	Beginning Conversational Hebrew 3	4	
LNI 4101	Elementary Italian 1	4	35.431
LNI 4102	Elementary Italian 2	4	35.432
LNI 4103	Elementary Italian 3	4	35.433
LNI 4104	Intermediate Italian 1	4	35.434
LNI 4105	Intermediate Italian 2	4	35.435
LNI 4106	Intermediate Italian 3	4	35.436
LNI 4801	Italian Directed Study 1	4	35.495
LNI 4802	Italian Directed Study 2	4	35.496
LNI 4803	Italian Directed Study 3	4	35.497
LNJ 4101	Elementary Japanese 1	4	34.421
LNJ 4102	Elementary Japanese 2	4	34.422
LNJ 4103	Elementary Japanese 3	4	34.423
LNJ 4104	Intermediate Japanese 1	4	34.424
LNJ 4105	Intermediate Japanese 2	4	34.425
LNJ 4106	Intermediate Japanese 3	4	34.426
LNL 4101	Beginning Latin 1	4	
LNL 4102	Beginning Latin 2	4	

New Course No.	Course Title	Q.H.	Old Course No.
LNL 4103	Beginning Latin 3	4	
LNN 4101	Beginning Conversational Swedish 1	4	34.460
LNN 4102	Beginning Conversational Swedish 2	4	34.461
LNN 4103	Beginning Conversational Swedish 3	4	34.462
LNN 4801	Swedish Directed Study 1	4	34.495
LNN 4802	Swedish Directed Study 2	4	34.496
LNN 4803	Swedish Directed Study 3	4	32.497
LNS 4101	Beginning Conversational Spanish 1	4	32.401
LNS 4102	Beginning Conversational Spanish 2	4	32.402
LNS 4103	Beginning Conversational Spanish 3	4	32.403
LNS 4104	Intermediate Spanish 1	4	32.404
LNS 4105	Intermediate Spanish 2	4	32.405
LNS 4106	Intermediate Spanish 3	4	32.406
LNS 4110	Conversational Spanish for the Law Enforcement Professional	4	32.420
LNS 4309	Spanish: The Generation of '98. The Great Flowering of Modern Spanish Letters	4	32.425
LNS 4801	Spanish Directed Study 1	4	32.495
LNS 4802	Spanish Directed Study 2	4	32.496
LNS 4803	Spanish Directed Study 3	4	32.497
MGT 4101	Introduction to Business and Management 1	3	45.301
MGT 4102	Introduction to Business and Management 2	3	45.302
MGT 4103	Introduction to Business and Management 3	3	45.303
MGT 4105	Introduction to Business and Management (Intensive)	6	45.305
MGT 4310	Project Planning and Control	3	45.306
MGT 4320	Managing Change	3	45.315
MGT 4323	Motivation Management	3	45.318
MGT 4325	Entrepreneurship and Small Business Management 1	3	45.323
MGT 4326	Entrepreneurship and Small Business Management 2	3	45.324
MGT 4327	Entrepreneurship and Small Business Management (Intensive)	6	45.325
MGT 4350	Business Policy 1	3	45.310
MGT 4351	Business Policy 2	3	45.311
MGT 4352	Business Policy (Intensive)	6	45.312
MGT 4355	Manager and Society	3	45.327
MGT 4356	International Business Management and Operations	3	45.330
MGT 4360	Management Seminar 1	3	45.313
MGT 4361	Management Seminar 2	3	45.314
MGT 4362	Advanced Management Seminar	3	45.326
MIS 4101	Introduction to Data Processing and Information Systems 1	3	49.310
MIS 4102	Introduction to Data Processing and Information Systems 2	3	49.311
MIS 4103	Introduction to Data Processing and Information Systems (Intensive)	6	49.314
MIS 4220	Introduction to Programming in COBOL	3	49.320
MIS 4221	COBOL Programming 1	3	49.321
MIS 4222	COBOL Programming 2	3	49.322
MIS 4223	COBOL Programming 3	3	49.323
MIS 4225	COBOL Programming (Intensive)	9	49.339
MIS 4231	COBOL Programming (Intensive) A	6	49.344
MIS 4232	COBOL Programming (Intensive) B	6	49.345
MIS 4235	Advanced COBOL Programming	3	49.341
MIS 4240	Introduction to Programming in BASIC	3	49.335
MIS 4241	Programming in BASIC 1	3	49.340
MIS 4242	Programming in BASIC 2	3	49.342
MIS 4250	FORTTRAN Programming 1	3	49.327
MIS 4251	FORTTRAN Programming 2	3	49.328
MIS 4252	FORTTRAN Programming 3	3	49.329
MIS 4253	FORTTRAN Programming (Intensive)	9	49.347
MIS 4260	Assembly Programming 1	3	49.324
MIS 4261	Assembly Programming 2	3	49.325
MIS 4262	Assembly Programming 3	3	49.326

New Course No.	Course Title	Q.H.	Old Course No.
MIS 4270	PASCAL Programming 1	3	49.343
MIS 4271	PASCAL Programming 2	3	49.346
MIS 4275	RPG Programming	3	49.330
MIS 4276	Programming in C	3	
MIS 4280	Computer Operating Systems 1	3	49.331
MIS 4281	Computer Operating Systems 2	3	49.332
MIS 4301	Systems Analysis and Design 1	3	49.360
MIS 4302	Systems Analysis and Design 2	3	49.361
MIS 4303	Systems Analysis and Design 3	3	49.362
MIS 4304	Systems Analysis and Design 4	3	49.363
MIS 4305	Systems Analysis and Design (Intensive) 1	6	49.375
MIS 4306	Systems Analysis and Design (Intensive) 2	6	49.379
MIS 4310	Data Systems Administration	3	49.364
MIS 4311	Business Data Processing Applications 1	3	49.365
MIS 4312	Business Data Processing Applications 2	3	49.366
MIS 4340	Minicomputers in Business 1	3	49.333
MIS 4341	Minicomputers in Business 2	3	49.334
MIS 4345	Data Base Systems	3	49.336
MIS 4350	Auditing Data Processing	3	49.369
MIS 4355	Information Processing in Medicine	3	49.373
MIS 4360	Computer Privacy and Security	3	49.376
MIS 4365	Structural Analysis and Design Methods	3	49.390
MIS 4380	Senior Seminar 1	3	49.367
MIS 4381	Senior Seminar 2	3	49.368
MKT 4301	Introduction to Marketing 1	3	43.301
MKT 4302	Introduction to Marketing 2	3	43.302
MKT 4304	Introduction to Marketing (Intensive)	6	43.303
MKT 4310	Advertising and Sales Promotion Management 1	3	43.310
MKT 4311	Advertising and Sales Promotion Management 2	3	43.311
MKT 4312	Advertising and Sales Promotion (Intensive)	6	43.330
MKT 4315	Sales Management 1	3	43.322
MKT 4316	Sales Management 2	3	43.323
MKT 4317	Sales Management (Intensive)	6	43.331
MKT 4320	Marketing Management 1	3	43.334
MKT 4321	Marketing Management 2	3	43.335
MKT 4322	Marketing Management (Intensive)	6	43.336
MKT 4330	Marketing Research 1	3	43.313
MKT 4331	Marketing Research 2	3	43.314
MKT 4335	Public Relations 1	3	43.316
MKT 4336	Public Relations 2	3	43.317
MKT 4337	Introduction to Advertising	3	43.318
MKT 4340	Retail Management 1	3	43.319
MKT 4341	Retail Management 2	3	43.320
MKT 4342	Retail Management (Intensive)	6	43.332
MKT 4350	Consumer Behavior	3	43.324
MKT 4352	Professional Selling Skills (Intensive)	6	43.340
MKT 4355	High-Technology Marketing	3	43.341
MKT 4358	Marketing and Sales Seminar	3	43.315
MLS 4301	Medical Laboratory Science Orientation	2	87.300
MLS 4321	Hematology	3	87.310
MLS 4322	Morphologic Hematology 1	3	87.311
MLS 4323	Morphologic Hematology 2	3	87.312
MLS 4341	Epidemiology 1	3	87.313
MLS 4342	Epidemiology 2	3	87.314
MLS 4352	Basic Medical Laboratory Science Electronics and Instrumentation	2	87.302
MLS 4365	Quality Control	3	87.301
MLS 4381	Seminar in Medical Technology	3	87.303
MS 4330	Introduction to Operations Research	3	49.380

New Course No.	Course Title	Q.H.	Old Course No.
MS 4331	Operations Research Applications	3	49.381
MS 4332	Statistical Quality Control	3	49.382
MS 4333	Management of Quality Control	3	49.383
MS 4334	Advanced Quality Control	3	49.384
MS 4335	Principles of Material Inspection	3	49.385
MS 4336	Industrial Experimentation	3	49.386
MS 4337	Principles of Quality Assurance	3	49.388
MTH 4001	Basic Mathematics 1	3	10.691
MTH 4002	Basic Mathematics 2	3	10.692
MTH 4110	Mathematics 1	3	10.627
MTH 4111	Mathematics 2	3	10.628
MTH 4112	Mathematics 3	3	10.629
MTH 4113	Mathematics (Intensive)	9	10.651
MTH 4140	Mathematics for Business Management 1	3	10.632
MTH 4141	Mathematics for Business Management 2	3	10.633
MTH 4142	Mathematics for Business Management 3	3	10.634
MTH 4143	Mathematics for Business Management (Intensive)	6	10.635
MTH 4130	Calculus for Non-engineers 1	3	10.640
MTH 4131	Calculus for Non-engineers 2	3	10.641
MTH 4132	Calculus for Non-engineers 3	3	10.642
MUS 4100	Introduction to Music	3	28.301
MUS 4103	Music as a Means of Social Expression	3	28.317
MUS 4105	Music U.S.A.	3	28.342
MUS 4106	Women in Music	3	28.303
MUS 4110	Music in Popular Culture	3	28.361
MUS 4111	Rock Music	3	
MUS 4112	Jazz: Evolution and Essence	3	28.326
MUS 4120	History of Musical Styles	3	28.311
MUS 4121	Medieval and Renaissance Music	3	28.305
MUS 4122	Music of the Baroque	3	28.306
MUS 4123	Music History of the Classical Period	3	28.403
MUS 4124	Music History of the Romantic Era	3	28.404
MUS 4125	Music History of the Twentieth Century	3	28.410
MUS 4126	Music History to 1750	3	28.402
MUS 4130	The Symphony	3	28.321
MUS 4132	The World of Opera	3	28.324
MUS 4133	Great Choral Literature	3	28.343
MUS 4136	European Music and Art	3	28.354
MUS 4137	Music of the Dance	3	28.383
MUS 4138	American Musical Theatre	3	28.398
MUS 4140	Life and Works of Mozart	3	28.332
MUS 4141	Life and Works of J. S. Bach	3	28.331
MUS 4144	Life and Works of Debussy	3	28.358
MUS 4145	Life and Works of Beethoven	3	28.333
MUS 4160	Music Therapy	3	
MUS 4165	The Music Industry	3	
MUS 4175	Music Teaching in Studio and Classroom	3	28.418
MUS 4176	Music Criticism—An Introduction	3	28.419
MUS 4180	Introduction to World Music	3	
MUS 4181	Music of Africa	3	28.313
MUS 4182	Music of the Middle East	3	28.312
MUS 4200	How to Read and Write Music	3	28.302
MUS 4201	Fundamentals of Music Theory 1	4	28.424
MUS 4202	Music Theory 2	4	28.425
MUS 4203	Music Theory 3	4	28.426
MUS 4204	Music Theory 4	3	28.427
MUS 4205	Music Theory 5	3	28.428
MUS 4206	Music Theory 6	3	28.429
MUS 4231	Musical Performance 1	1	28.411

New Course No.	Course Title	Q.H.	Old Course No.
MUS 4232	Musical Performance 2	1	28.412
MUS 4233	Musical Performance 3	1	28.413
MUS 4234	Musical Performance 4	1	28.414
MUS 4235	Chamber Music 1	3	28.467
MUS 4236	Chamber Music 2	3	28.468
MUS 4237	Chamber Music 3	3	28.469
MUS 4241	Piano Class 1	3	28.431
MUS 4242	Piano Class 2	3	28.432
MUS 4243	Piano Class 3	3	28.433
MUS 4244	Voice Class	3	
MUS 4247	Guitar Class 1	3	28.437
MUS 4248	Guitar Class 2	3	28.438
MUS 4249	Guitar Class 3	3	28.439
MUS 4250	Conducting 1	3	28.415
MUS 4251	Recorder Class 1	3	28.434
MUS 4252	Recorder Class 2	3	28.435
MUS 4253	Recorder Class 3	3	28.436
MUS 4254	Instrument Tutorial 1	3	28.471
MUS 4255	Instrument Tutorial 2	3	28.472
MUS 4256	Instrument Tutorial 3	3	28.473
MUS 4301	Form and Analysis	3	28.409
MUS 4541	Master Class 1	3	28.481
MUS 4542	Master Class 2	3	28.482
MUS 4543	Master Class 3	3	28.483
MUS 4800	Directed Study 1	3	28.390
MUS 4801	Directed Study 2	3	28.391
MUS 4810	Honors Program 1	4	28.495
MUS 4811	Honors Program 2	4	28.496
MUS 4812	Honors Program 3	4	28.497
NUR 4300	Transition	9	
NUR 4301	Psychiatric/Mental Health Nursing	7	
NUR 4302	Pharmacodynamics	3	73.316
NUR 4400	Maternal and Child Nursing	9	
NUR 4401	Medical-Surgical Nursing	9	
NUR 4500	Community Health Nursing	9	
NUR 4501	Contemporary Nursing	9	
PED 4200	Cardiovascular Health and Exercise	3	62.410
PHL 4100	Philosophy: Methods and Values	3	26.301
PHL 4105	Philosophy of Knowing and Reality	3	26.302
PHL 4110	Philosophy of Right and Justice	3	26.303
PHL 4115	Introduction to Philosophy (Intensive)	9	26.310
PHL 4140	Social and Political Philosophy	3	26.386
PHL 4165	Moral Problems in Medicine	3	26.384
PHL 4170	The Human Search for Meaning	3	26.314
PHL 4180	Business Ethics	3	26.336
PHL 4181	Philosophy of Professionalism	3	26.337
PHL 4200	Introduction to Logic	3	26.334
PHL 4215	Introduction to Symbolic Logic	3	26.372
PHL 4220	The Meaning of Death	3	26.376
PHL 4223	Philosophy of Consciousness	3	26.377
PHL 4225	Major Thinkers of Our Times	3	26.309
PHL 4230	Ethics 1	3	26.331
PHL 4231	Ethics 2	3	26.332
PHL 4232	Ethics 3	3	26.333
PHL 4240	Philosophy of Art	3	26.381
PHL 4243	Existentialism	3	26.353
PHL 4245	Philosophy of Religion	3	26.373
PHL 4247	Theistic, Atheistic, and Agnostic Philosophies	3	26.374
PHL 4250	Philosophy of Human Nature	3	26.315

New Course No.	Course Title	Q.H.	Old Course No.
PHL 4251	Images of Woman in Philosophy	3	26.382
PHL 4265	Understanding Religion in America	3	26.322
PHL 4270	The Great Western Religions	3	26.321
PHL 4273	Judaism	3	26.363
PHL 4275	The Great Eastern Religions	3	26.320
PHL 4277	Hinduism	3	26.361
PHL 4279	Buddhism	3	26.360
PHL 4280	Islam	3	26.362
PHL 4293	Mysticism: East and West	3	26.367
POL 4101	Introduction to Political Science 1	3	22.401
POL 4102	Introduction to Political Science 2	3	22.402
POL 4103	Introduction to Politics	3	22.403
POL 4104	Introduction to American Government	3	22.404
POL 4105	Introduction to Comparative Politics	3	22.405
POL 4300	Public Administration 1	3	22.316
POL 4301	Public Administration 2	3	22.317
POL 4302	Public Administration (Intensive)	6	22.321
POL 4303	Public Personnel Administration	3	22.311
POL 4304	Public Budgeting	3	22.310
POL 4305	Organizational Theory	3	22.406
POL 4306	Public Policy Analysis	3	22.309
POL 4310	American Political Thought	3	22.306
POL 4311	Research Methods	3	22.308
POL 4312	Political Parties and Pressure Groups	3	22.313
POL 4313	Government and Politics of the States	3	22.318
POL 4314	Urban and Metropolitan Government	3	22.312
POL 4318	The American Presidency	3	22.320
POL 4319	The Legislative Process	3	22.319
POL 4320	American Constitutional Law	3	22.314
POL 4321	Civil Rights	3	22.315
POL 4322	Procedural Due Process	3	22.328
POL 4330	Comparative Politics	3	22.329
POL 4331	International Relations	3	22.335
POL 4332	International Organization	3	22.332
POL 4333	International Law	3	22.341
POL 4335	Formulating American Foreign Policy	3	22.333
POL 4336	American Foreign Policy 1	3	22.342
POL 4337	American Foreign Policy 2	3	22.343
POL 4338	European Political Parties	3	22.337
POL 4339	Government and Politics in the Soviet Union 1	3	22.344
POL 4340	Government and Politics in the Soviet Union 2	3	22.345
POL 4341	Soviet Foreign Policy	3	22.334
POL 4342	Communism in Eastern Europe 1	3	22.364
POL 4343	Communism in Eastern Europe 2	3	22.365
POL 4350	Politics and Policies of the Developing Nations 1	3	22.360
POL 4351	Politics and Policies of the Developing Nations 2	3	22.361
POL 4352	Government and Politics of Latin America 1	3	22.355
POL 4353	Government and Politics of Latin America 2	3	22.356
POL 4356	Government and Politics of Northern Africa	3	22.363
POL 4357	Government and Politics of Sub-Saharan Africa	3	22.362
POL 4359	Government and Politics in the Middle East 1	3	22.352
POL 4360	Government and Politics in the Middle East 2	3	22.353
POL 4362	Government and Politics of Southeast Asia	3	22.358
POL 4364	Communist China's Foreign Policy	3	22.338
POL 4365	Government and Politics of Communist China 1	3	22.347
POL 4366	Government and Politics of Communist China 2	3	22.348
POL 4367	Government and Politics of Japan	3	22.359
POL 4370	Introduction to Political Theory	3	22.336
POL 4371	Contemporary Political Theory	3	22.305

New Course No.	Course Title	Q.H.	Old Course No.
POL 4375	Consumer Advocacy 1	3	22.370
POL 4376	Consumer Advocacy 2	3	22.371
POL 4377	Consumer Advocacy 3	3	22.372
POL 4378	Current Political Issues	3	22.351
POL 4830	Honors Program 1	4	22.391
POL 4831	Honors Program 2	4	22.392
POL 4832	Honors Program 3	4	22.393
POL 4840	Directed Study 1	3	22.491
POL 4841	Directed Study 2	3	22.492
PSY 4110	Introduction to Psychology: Fundamental Issues	3	19.301
PSY 4111	Introduction to Psychology: Developmental Aspects	3	19.302
PSY 4112	Introduction to Psychology: Personal Dynamics	3	19.303
PSY 4113	Introduction to Psychology (Intensive) A	9	19.307
PSY 4114	Introduction to Psychology (Intensive) B	6	19.401
PSY 4220	Statistics in Psychology 1	3	19.304
PSY 4221	Statistics in Psychology 2	3	19.305
PSY 4222	Statistics in Psychology 3	3	19.306
PSY 4231	Psychology of Learning 1	3	19.338
PSY 4232	Motivation	3	19.323
PSY 4240	Developmental Psychology: Infancy and Childhood	3	19.311
PSY 4241	Developmental Psychology: Adolescence	3	19.312
PSY 4242	Developmental Psychology: Adulthood and Old Age	3	19.313
PSY 4262	Cognitive Psychology	3	19.351
PSY 4263	Psycholinguistics	3	19.352
PSY 4270	Social Psychology 1	3	19.324
PSY 4271	Social Psychology 2	3	19.325
PSY 4272	Personality 1	3	19.314
PSY 4290	Psychology of Women	3	19.360
PSY 4351	Physiological Psychology 1	3	19.380
PSY 4352	Drugs and Behavior	3	19.388
PSY 4370	Impact of Psychology on Society	3	19.389
PSY 4372	Abnormal Psychology 1	3	19.341
PSY 4373	Abnormal Psychology 2	3	19.342
PSY 4374	Abnormal Psychology 3	3	19.343
PSY 4375	Abnormal Psychology (Intensive)	9	19.344
PSY 4381	Sensation and Perception 1	3	19.349
PSY 4390	Industrial Psychology 1	3	19.332
PSY 4391	Industrial Psychology 2	3	19.333
PSY 4392	Industrial Psychology 3	3	19.334
PSY 4410	Scientific Foundations of Psychology 1	3	19.361
PSY 4411	Scientific Foundations of Psychology 2	3	19.362
PSY 4471	Psychological Therapies	3	19.345
PSY 4531	Psychology of Learning 2 (Laboratory)	3	19.340
PSY 4551	Physiological Psychology 2 (Laboratory)	3	19.381
PSY 4572	Personality 2 (Laboratory)	3	19.315
PSY 4581	Sensation and Perception 2 (Laboratory)	3	19.350
PSY 4611	Senior Seminar in Psychology	3	19.371
PSY 4811	Directed Study 1	3	19.491
PSY 4812	Directed Study 2	3	19.492
PSY 4813	Field Work in Psychology	6	19.499
PSY 4891	Honors Program 1	4	19.391
PSY 4892	Honors Program 2	4	19.392
PSY 4893	Honors Program 3	4	19.393
PUR 4351	Purchasing 1	3	45.451
PUR 4352	Purchasing 2	3	45.452
PUR 4353	Purchasing (Intensive)	6	45.453
PUR 4355	Materials Acquisition Function	3	45.455
PUR 4357	The Art and Technique of Negotiation in Business	3	45.457
PUR 4358	Materials Requirements Planning	3	45.458

New Course No.	Course Title	Q.H.	Old Course No.
PUR 4359	Subcontract Management	3	45.459
PUR 4360	International Procurement	3	45.460
RAD 4100	Radiologic Technology Orientation 1	3	86.420
RAD 4101	Radiologic Technology Orientation 2	3	86.421
RAD 4102	Radiologic Science 1	4	86.422
RAD 4103	Radiologic Science 2	4	86.423
RAD 4104	Principles of Radiology 1	4	86.424
RAD 4105	Principles of Radiology 2	4	86.425
RAD 4106	Radiologic Photography and Exposure 1	4	86.426
RAD 4107	Radiologic Photography and Exposure 2	4	86.427
RAD 4108	Radiology Practicum 1	3	86.648
RAD 4109	Radiology Practicum 2	3	86.649
RAD 4110	Radiology Practicum 3	3	86.650
RAD 4111	Radiology Practicum 4	3	86.651
RAD 4112	Gross Anatomy and Physiology 1	4	
RAD 4113	Gross Anatomy and Physiology 2	4	
RAD 4300	Advanced Radiologic Technology 1	3	86.434
RAD 4301	Advanced Radiologic Technology 2	3	86.435
RAD 4302	Imaging Modalities	3	86.628
RAD 4303	Radiation Protection—Radiobiology	3	86.629
RAD 4304	Cross-Sectional Anatomy	4	
RE 4301	Real Estate Fundamentals 1	3	47.320
RE 4302	Real Estate Fundamentals 2	3	47.321
RE 4303	Real Estate Fundamentals (Intensive)	6	47.322
RE 4323	Real Estate Appraisal 1	3	47.323
RE 4324	Real Estate Appraisal 2	3	47.324
RE 4326	Appraising a Single Family Dwelling	3	47.339
RE 4328	Real Estate Financial Analysis 1	3	47.328
RE 4329	Real Estate Financial Analysis 2	3	47.329
RE 4330	Real Estate Financial Analysis (Intensive)	6	47.338
RE 4340	Real Estate Development	3	47.330
RE 4341	Real Estate Law 1	3	47.331
RE 4342	Real Estate Law 2	3	47.332
RE 4344	Real Estate Management 1	3	47.334
RE 4345	Real Estate Management 2	3	47.335
RE 4346	Real Estate Management 3	3	47.336
RE 4347	Real Estate Title Examination	3	47.337
REC 4101	Principles and Practices of Therapeutic Recreation 1	3	63.301
REC 4102	Principles and Practices of Therapeutic Recreation 2	3	63.302
REC 4103	Principles and Practices of Therapeutic Recreation 3	3	63.303
REC 4110	Group Dynamics and Leadership 1	3	63.304
REC 4111	Group Dynamics and Leadership 2	3	63.305
REC 4112	Group Dynamics and Leadership (Intensive)	6	63.306
REC 4300	Arts and Crafts 1	3	63.323
REC 4301	Arts and Crafts 2	3	63.324
REC 4302	Arts and Crafts (Intensive)	6	63.325
REC 4310	Social Recreation	3	63.321
REC 4311	Music Therapy	3	63.322
REC 4312	Media Resources and Techniques	3	63.326
REC 4313	Therapeutic Use of Dramatics	3	63.327
REC 4401	The Nursing Home Experience	3	63.331
REC 4410	Therapeutic Recreation in Rehabilitation	3	63.332
REC 4420	Activity and Movement Analysis	3	63.335
REC 4425	Mental Illness and Retardation	3	63.336
REC 4430	Therapeutic Recreation in Child Development	3	63.337
REC 4440	Humanistic and Holistic Approaches in Therapeutic Recreation	3	63.341
REC 4445	Community Recreation for the Handicapped	3	63.343
REC 4460	The Process of Aging	3	63.330
REC 4461	Outdoor Education for the Handicapped	3	63.334

New Course No.	Course Title	Q.H.	Old Course No.
REC 4462	Leisure Counseling	3	63.340
REC 4500	Field Practicum 1	4	63.310
REC 4501	Field Practicum 2	4	63.311
REC 4802	Independent Study 1	4	63.315
REC 4803	Independent Study 2	4	63.316
SOA 4100	Anthropology 1	3	20.301
SOA 4101	Anthropology 2	3	20.302
SOA 4102	Anthropology 3	3	20.303
SOA 4104	Anthropology (Intensive)	9	20.304
SOA 4135	Language and Culture	3	20.360
SOA 4146	Peasant Societies in a Changing World	3	20.428
SOA 4155	Individual and Culture	3	20.321
SOA 4160	Sex, Sex Roles, and the Family	3	20.348
SOA 4266	Folklore	3	20.349
SOA 4320	Field Work in Anthropology	6	20.499
SOA 4322	Anthropological Theory	3	20.337
SOA 4425	Social Organization of Non-State Societies	3	20.331
SOA 4430	Native North American Peoples	3	20.341
SOA 4431	African Peoples and Cultures	3	20.344
SOA 4434	Latin American Peoples and Cultures	3	20.347
SOA 4470	Religion in Cross-Cultural Perspective	3	20.332
SOC 4010	Principles of Sociology 1	4	21.401
SOC 4011	Principles of Sociology 2	4	21.402
SOC 4100	Introduction to Sociology: Fundamental Issues	3	21.301
SOC 4101	Introduction to Sociology: The Individual and Social Roles	3	21.302
SOC 4102	Introduction to Sociology: Critical Issues Facing Society	3	21.303
SOC 4103	Introduction to Sociology (Intensive) A	9	21.304
SOC 4104	Introduction to Sociology (Intensive) B	6	
SOC 4120	Sociology of Boston	3	21.420
SOC 4125	Social Problems	3	21.347
SOC 4147	Urban Sociology	3	21.357
SOC 4154	Sex and Gender Roles in Society	3	21.307
SOC 4155	Sociology of the Family 1	3	21.351
SOC 4156	Sociology of the Family 2	3	21.352
SOC 4160	Sociology of Education	3	21.365
SOC 4170	Race and Ethnic Relations	3	21.353
SOC 4175	Sociology of Work	3	21.422
SOC 4176	Business and Industrial Sociology	3	21.421
SOC 4185	Sociology of Deviant Behavior	3	21.346
SOC 4186	Social Control	3	21.334
SOC 4190	Juvenile Delinquency	3	21.350
SOC 4195	Drugs and Society	3	21.305
SOC 4205	Law and Society	3	21.426
SOC 4215	Medical Sociology	3	21.360
SOC 4220	Sociology of Mental Health	3	21.361
SOC 4225	Social Gerontology: The Aged in Society	3	21.363
SOC 4240	Sociology of Human Service Organizations	3	25.351
SOC 4241	Human Services Professions	3	25.350
SOC 4245	Poverty and Inequality	3	21.356
SOC 4255	Sociology of Sport	3	21.341
SOC 4260	Introduction to Social Work Practice 1	3	25.343
SOC 4261	Introduction to Social Work Practice 2	3	25.344
SOC 4262	Introduction to Social Work Practice 3	3	25.345
SOC 4286	Science and Society	3	21.423
SOC 4300	Social Theory 1	3	21.317
SOC 4301	Social Theory 2	3	21.318
SOC 4302	Social Theory 3	3	21.319
SOC 4303	Social Theory (Intensive)	9	21.425
SOC 4310	Class Power and Social Change	3	21.427

New Course No.	Course Title	Q.H.	Old Course No.
SOC 4321	Social Research Methods 1	4	21.312
SOC 4322	Social Research Methods 2	4	21.313
SOC 4323	Social Research Methods 3	4	21.314
SOC 4324	Evaluation of Social Intervention	3	25.352
SOC 4347	Community Analysis	3	21.358
SOC 4348	Seminar in Urban Studies	3	21.359
SOC 4375	Sociology of Occupations and Professions	3	21.370
SOC 4376	Sociology of Industry	3	21.373
SOC 4377	Sociology of Formal Organizations: Humans, Machines, and Bureaucracy	3	21.375
SOC 4470	Sociology of Religion	3	21.306
SOC 4800	Directed Study 1	3	21.491
SOC 4801	Directed Study 2	3	21.492
SOC 4805	Field Work in Sociology	6	21.499
SOC 4820	Honors Program 1	4	21.391
SOC 4821	Honors Program 2	4	21.392
SOC 4822	Honors Program 3	4	21.393
SPC 4001	Speaking Skills for International Students 1	3	37.364
SPC 4002	Speaking Skills for International Students 2	3	37.365
SPC 4003	Speaking Skills for International Students 3	3	37.366
SPC 4101	Effective Communication 1	3	37.301
SPC 4102	Effective Communication 2	3	37.302
SPC 4103	Effective Communication 3	3	37.303
SPC 4104	Effective Communication (Intensive)	6	37.315
SPC 4111	Voice and Articulation 1	3	37.304
SPC 4112	Voice and Articulation 2	3	37.305
SPC 4113	Oral Interpretation	3	37.306
SPC 4150	Self Concept and Communication	3	37.333
SPC 4151	Listening	3	37.334
SPC 4152	Interviewing	3	37.335
SPC 4201	Argumentation and Discussion	3	37.308
SPC 4202	Parliamentary Procedure	3	37.309
SPC 4221	Interpersonal Communications 1	3	37.327
SPC 4222	Interpersonal Communications 2	3	37.328
SPC 4223	Interpersonal Communications 3	3	37.329
SPC 4231	Female/Male Communication 1	3	37.330
SPC 4232	Female/Male Communication 2	3	37.331
SPC 4233	Female/Male Communication 3	3	37.332
SPC 4251	Business and Professional Speaking	3	37.307
SPC 4261	Oral Collaboration	3	37.316
TCC 4101	Technical Writing 1	3	30.410
TCC 4102	Technical Writing 2	3	30.411
TCC 4103	Technical Writing (Intensive)	6	30.412
TCC 4105	Editing for Science and Technology	3	30.413
TCC 4301	Computer Software Technical Writing 1	3	30.425
TCC 4302	Computer Software Technical Writing 2	3	30.426
TCC 4311	Hardware Technical Manual Writing 1	3	30.420
TCC 4312	Hardware Technical Manual Writing 2	3	30.421
TCC 4320	Proposal Writing	3	30.415
TCC 4330	The Business and Technical Presentation	3	30.430
TCC 4350	Concepts of Modern Technology 1	3	93.550
TCC 4351	Concepts of Modern Technology 2	3	93.551
TCC 4352	Measurement and Analysis	3	93.552
TCC 4353	Modern Electronics	3	93.553
TCC 4354	Theory and Operation of Computers	3	93.554
TRN 4301	Elements of Transportation	3	48.301
TRN 4302	Physical Distribution Management	3	48.302
TRN 4305	Traffic Management 1—Rates and Tariffs	3	48.305
TRN 4306	Traffic Management 2—Selected Topics	3	48.306

New			Old
Course No.	Course Title	Q.H.	Course No.
TRN 4307	Contemporary Issues in Transportation and Distribution	3	48.307
TRN 4316	Carrier Management	3	48.316
TRN 4321	Transportation Regulation 1	3	48.321
TRN 4322	Transportation Regulation 2	3	48.322
TRN 4325	Management of Warehouse Operations	3	48.304
TRN 4330	Organization and Control of Physical Distribution Management	3	48.303
TRN 4331	Surface Transportation 1—Railroad Management	3	48.310
TRN 4332	Surface Transportation 2—Motor Carrier Management	3	48.311
TRN 4333	Surface Transportation 3—Marine Transportation	3	48.312
TRN 4334	Surface Transportation 4—Private Trucking	3	48.313
TRN 4340	Air Transportation	3	48.314
TRN 4341	Urban Transportation	3	48.315
TRN 4342	Transportation Loss, Damage, and Other Claims	3	48.320
TRN 4350	International Transportation and Distribution Management	3	48.323
TRN 4351	Case Studies in Transportation Regulation 1	3	48.324
TRN 4352	Case Studies in Transportation Regulation 2	3	48.325
TRN 4353	Case Studies in Transportation Regulation 3	3	48.326

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- Thomas J. Ahern, Jr., J.D.*
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Silver and Ahern
- H. David Ahlberg, Ph.D.*
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- R. Wayne Anderson, Ph.D.*
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Waters Business Systems, Inc.
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Hollingsworth & Pappas
- Frances M. Bancroft, B.A.
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- Louis E. Banderet, Ph.D.
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Itek Corp.
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Athlete's Corner
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- Diane M. Bellavance, M.A.
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- Claire T. Bennett, M.S.
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N.E. Conservatory Extension

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Mass. Dept. of Public Health
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- Rev. Richard W. Burton, B.S.
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The New Can Co., Inc.
- Janet H. Carr, M.A.
English
- John M. Carr, B.S.
Earth Science
Museum of Science
- William F. Carr, LL.B.
Law
Puopolo & Carr
- Patrick R. Carroll, Esq., J.D.*
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Massachusetts Hospital Association
- William S. Carroll, Esq., J.D.
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National Medical Care, Inc.
- Barbara A. Carson, M.A.
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- Arthur E. Carter, M.A.
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- Norman J. Cartmill, M.B.A.*
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Carnor, Inc.
- Arthur F. Casavant, M.B.A.
Purchasing
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Law Enforcement
Casey's Investment Agency, Inc.
- Robert W. Casey, M.Ed.
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- Sharron G. Cassavant, Ph.D.
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Data General Corp.
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- Kenneth Chernack, M.B.A.
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N.E. Mutual Life Ins. Co.
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Mass. Dept. of Corrections
- Catherine A. Chokola, M.F.A.
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State of R.I. and Prov. Plant
- John A. Christoforo, Jr., M.B.A.
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Finance
Maine Capital Corp.
- Julio A. Colavita, B.S.
Information Systems
Raytheon Co.
- Jaimee W. Colbert, M.A.
English
- Alexander M. Colby, M.B.A.
Finance
State Street Bank & Trust
- Stephen F. Coleman, M.S.
Political Science
Northeastern University
- Annalee Collins, R.R.A., B.S.*
Health Professions
Northeastern University
- William J. Collins, M.B.A.
Industrial Management
Defense Contracts Admin.
- Richard J. Comings, M.A., M.P.A.*
History
Northeastern University
- John J. Condon, Jr., M.B.A.
Accounting
Avco Systems Division
- Paul C. Condon, M.B.A.
Marketing
Amnet, Inc.
- Elizabeth M. Congdon, M.A.
History
Peabody School System
- Norman J. Conklin, B.S.*
Information Systems
Honeywell Information Systems
- Nigel A. Conliffe, B.S.
Information Systems
Interactive Images
- James E. Conlin, M.B.A.
Management
Fitchburg State College
- Leonard M. Conlin, M.Ed.*
Mathematics
Framingham North High School
- John J. Connelly, B.S.
Law Enforcement
Mass. Trial Ct. Norfolk County
- William G. Connelly, B.S.
Law Enforcement
Metropolitan District Police Ret.
- Thomas F. Connerty, M.B.A.
Information Systems
Prime Computer, Inc.
- James J. Connolly, M.B.A.
Accounting
Natick Public Schools
- Mary T. Connor, B.S.
Health Professions
Children's Hospital Medical Ctr.
- Joseph N. Connors, M.P.A.*
Political Science
Northeastern University
- Linda W. Conrad, J.D.
Journalism
Swartz & Swartz
- Louis E. Conrad, M.S.
Journalism
Northeastern University
- Lindsay Cook, M.S.
Accounting
Liberty Financial Services Co.
- Harold F. Cooper, Ph.D.
Anthropology/Sociology
W. Yarmouth Congregational Church
- Robert L. Cord, Ph.D.
Political Science
Northeastern University
- Dyer Cornell, M.B.A.
Finance
The First National Bank
- Richard S. Corrente, M.B.A.*
Management
Raytheon Company
- Edward V. Cosgrove, Ph.D.
Biology
Commonwealth of Massachusetts
- William H. Costello, Ph.D.
Psychology
Dr. William H. Costello, Ph.D.
- James W. Cottom, M.A.
History
Massasoit Community College
- Suzanne M. Cotton, M.A.
Psychology
Northeastern University
- David C. Coughlin, M.P.A.
Political Science
Al Nellum and Associates

*Denotes senior lecturer as of October 1983.

- Paul D. Coughlin, M.B.A.*
Finance
First National Bank
- Geoffrey R. Coulter, Ph.D.
Modern Language
Northeastern University
- Gregory R. Couture, B.A.
Political Science
Northeastern University
- Johnathan C. Covell, B.A.
Information Systems
Hills Department Store
- Thomas F. Coveney, M.B.A.*
Information Systems
Stone & Webster Eng. Corp.
- James M. Cox, M.Ed.*
Law Enforcement
Boston Police
- Wallace Coyle, Ph.D.
English
University of Massachusetts
- John E. Coyne, J.D.
Management
Self-Employed
- Ralph J. Crandall, Ph.D.
History
N.E. Hist. Genealogical Society
- Carol L. Crane, M.Ed.
Women's Career Program
Mass. Higher Ed. Asst. Corp.
- Bryan D. Craven, B.S.
Information Systems
General Electric Co.
- Salvatore A. Crisafulli, M.B.A.*
Information Systems
Arthur D. Little, Inc.
- Robert D. Crofts, M.A.*
Economics
Salem State College
- Peter V. Crone, M.A.
Law Enforcement
Brockton Police Department
- John F. Cronin, Jr., M.B.A.*
Accounting
Raytheon Co.
- Joseph W. Cronin, B.S.*
Management Sciences
Sanders Associates
- Hugh J. Crossland, D.M.D.*
Law
Crossland Aresty & Levin
- Brian C. Crowley, M.B.A.*
Accounting
Theta-J Corp.
- Dennis M. Crowley, J.D.
Law Enforcement
First Security Services
- John F. Cullen, J.D.*
Law Enforcement
John F. Cullen, Atty. at Law
- Joseph I. Cullen, M.Ed.
Law Enforcement
Mass. Dept. of Youth Services
- David M. Culver, Ph.D.*
History
Bridgewater State College
- Edmund Cuoco, B.A.
English
Lexicon, Inc.
- Helen M. Curley, M.A.*
Law Enforcement
- Albert C. D'Amato, M.Ed.
English
Northeastern University
- Miriam F. D'Amato, M.A.
English
Professional Editorial Services
- Ralph A. D'Amelio, B.S.
Information Systems
Wang Laboratories
- Patricia Dacey, M.Ed.
Women's Career Program
Y.W.C.A.
- Joanne M. Dalton, M.S.
Nursing Home Management
Northeastern University
- Arnold E. Daum, B.S.*
Marketing
Arnold E. Daum Co.
- Donna M. Davis, M.A.
History
ABT Associates
- Gerald L. Davis, Ph.D.
Health Professions
Northeastern University
- Richard J. Davis, M.A.*
Law Enforcement
Belmont School Dept.
- Willie J. Davis, J.D.*
Law Enforcement
Attorney at Law
- Peter U. Decenzo, B.S.
Mathematics
Ashland High School
- John C. Decker, M.B.A.
Human Resources Management
Harvard Trust Co.
- Cynthia A. Dedes, M.S.
Health Professions
Northeastern University
- John R. Deitrick, M.A.*
English
Becker Junior College
- Richard P. Del Prete, Ed.D.
Anthropology/Sociology
Lasell Junior College
- Joyce Delorey, M.A.
Alternative Freshman Program
- Janice B. Delsesso, M.A.
Music
- Dante J. DeMichaelis, J.D.*
Law Enforcement
Attorney at Law
- Robert J. Dennehy, M.B.A.
Accounting
Self-Employed
- Mabel T. Denunzio, Ed.D.
Law Enforcement
- Arthur J. DePietro, L.S.C.W.
Law Enforcement
Juvenile Court
- Paul J. Derby, M.B.A.*
Information Systems
Honeywell, Inc.
- Joseph B. DeRoche, M.F.A.*
English
Northeastern University
- Stephen R. Derosier, M.B.A.
Management
Northeastern University
- Harry G. DeSalvatore, M.S.
Therapeutic Recreation
N.E. Memorial Hospital
- Ernest P. Desimone, J.D.
Real Estate
Dept. of the Attorney General
- Debra Desmarais, A.S.
Radiology Technology
- Richard K. Deveney, M.Ed.
Mathematics
Jamaica Plain High School
- James D. Devlin, B.S.
Marketing
- Jane E. Devoe, M.A.
Alternative Freshman Program
- Brian S. Dextradeur, B.S.
Management Sciences
Polaroid Corp.
- Francis J. di Sabatino, M.A.
Chemistry
Quincy High School
- Melinda M. di Sessa, Ph.D.*
Philosophy/Religion
- Norma DiAndrea, B.A.
Radiology Technology
University Hospital
- Arthur F. Diette, Jr., B.S.
Law Enforcement
Lowell Police Dept.
- Jeffrey E. Diuglio, M.A.
English
ELS Language Center
- Edward J. Dillon, M.B.A.*
Human Resources Management
Raytheon Co.
- Howard T. Dimmick, M.Ed.*
Earth Science
Town of Stoneham
- Robert F. Dincauze, M.B.A.
Management
Harvard Bookstore Cafe
- Ernest S. Dinisco, J.D.
Law Enforcement
U.S. Dept. of Justice
- Theodore Distaso, Jr., M.P.A.
Political Science
U.S. Dept. of Defense
- Rosemarie M. Dittmer, M.A.
English
- James E. Doan, Ph.D.
English
Chamberlayne Junior College
- Alan F. Dodd, Esq., J.D.
Political Science
- Alan F. Dodd, Esq.
Edward Doherty, B.S.*
Law Enforcement
Boston Police Department
- Robert A. Dolan, M.Ed.*
Law Enforcement
Research Publishing Co., Inc.
- Mark Domaszewicz, M.S.E.E.*
Mathematics
Raytheon Co.
- Janice E. Donatelli, B.S.
Biology
Northeastern University
- Michael B. Donham, M.B.A.*
Human Resources Management
The Center House, Inc.
- Edward M. Donie, M.S.
Information Systems
Data General Corp.
- Elizabeth B. Donovan, J.D.
Real Estate
Commonwealth of Massachusetts
- John A. Donovan, M.A.
Economics
Northeastern University
- Timothy R. Donovan, Ph.D.*
English
Northeastern University
- Eugene J. Doody, M.B.A.*
Human Resources Management
Avco Systems Division
- Marcia A. Dorey, M.S.
Library Science
Pilgrim Church
- Edward M. Dormady, B.A.
Information Systems
Hills Department Stores
- Michael C. Dornan, M.A.
Anthropology/Sociology
Northeastern University
- James W. Dottin, Jr., M.B.A.
Information Systems
- Nadine V. Dowling, M.B.A.
Human Resources Management
Northeastern University
- Nancy L. Dowling, M.Ed.
Alternative Freshman Program
Northeastern University
- James F. Downey, Ph.D.
Management
Leventhal & Horwath
- Rose A. Doyon, M.A.*
English
- John Dreijmanis, M.A.
Political Science
Northeastern University
- Joan F. Drexelius, Ph.D.
Speech
Northeastern University
- Claire M. Driscoll, M.A.
Mathematics
Northeastern University
- John P. Driscoll, Esq., J.D.
Real Estate
Self-Employed

- Walter T. Driscoll, Jr., M.P.A.*
Law Enforcement
Scituate Police Department
- H. Alfred Droge, B.S.
Information Systems
Self-Employed
- David C. Dronsick, M.A.*
Earth Science
Commonwealth of Massachusetts
- Neil F. Duane, M.S.
English
Hewlett-Packard Co.
- Edward L. Dube, M.B.A.*
Management
ELD Associates
- Ardyn E. Dubnow, M.B.A.*
Accounting
Northrop Corp.
- Terrance J. Dugan, M.B.A.
Finance
Investors Bank and Trust Co.
- Lance R. Dunham, A.S.
Radiology Technology
Brigham & Women's Hospital
- Daniel T. Dunn, D.B.A.
Marketing
Northeastern University
- Laura W. Dunn, M.A.
English
- Edward A. Duprez, Jr., M.B.A.
Management
Emmanuel College
- Paul J. Duval, M.B.A.
Information Systems
State Exec. Off. Adm. & Finance
- Barbara Dvorchak, M.S.
Alternative Freshman Program
- Judith T. Dwyer, M.A.
Psychology
Northeastern University
- William C. Dwyer, M.B.A.
Management
Sherwood Lumber Corp.
- Richard T. Dyro, Ed.D.
English
- Carl W. Eastman, M.A.*
Speech
Northeastern University
- William T. Edgett, M.A.*
Human Resources Management
Northeastern University
- Maureen L. Edison, M.A.*
English
Lynn Hospital
- Gary A. Edwards, M.A.
Accounting
U.S. Dept. of Labor
- Richard K. Edwards, M.A.
Anthropology/Sociology
Northeastern University
- Andrew E. Efstathiou, B.A.
Information Systems
Commonwealth of Massachusetts
- Kathryn A. Efstathiou, B.A.
Information Systems
- David M. Ehrmann, B.S.
Speech
Hanover High School
- Abul Ehsan, B.A.
Economics
Northeastern University
- Hoda A. El Wakil, M.S.
Chemistry
Northeastern University
- Mohamed El-Sayed, M.S.
Chemistry
Northeastern University
- James H. Elgin, M.B.A.*
Information Systems
Digital Equipment Corp.
- Stephen E. Elmont, A.S.
Management
Creative Gourmets, Ltd.
- Alyaa Emad El-Din, B.S.
Chemistry
Northeastern University
- Louis J. Ennis, M.B.A.
Management
Brandeis University
- J. Clive Enos, B.S.*
Human Resources Management
- Herbert J. Eskot, M.A.
Economics
Northeastern University
- Ugo E. Evangelista, M.S.
Mathematics
Revere High School
- Benedetto Fabrizi, Ph.D.
Modern Language
Northeastern University
- Robert M. Fahey, M.Ed.
Information Systems
Commercial Union Assurance Co.
- Michael V. Fair, M.S.W.
Law Enforcement
Mass. Dept. of Corrections
- Eugene F. Fallon, M.B.A.*
Finance
GenRad, Inc.
- Edward J. Falvey, M.B.A.*
Management
Massachusetts Companies, Inc.
- Andrew C. Fantasia, M.B.A.
Accounting
Self-Employed
- Daniel M. Fasulo, M.P.A.*
Law Enforcement
Haverhill Police Department
- Abdul Fattah, M.S.
Economics
Northeastern University
- Joanne Fattori, M.A.
English
- Richard J. Faulstich, A.B.
Human Resources Management
Raytheon Co.
- John R. Feeney, M.A.
Economics
Moseley Hullgarten Estabrook
- Irwin Feigelman, B.S.*
Accounting
U.S. Government
- David Feinman, M.B.A.
Management Sciences
Independent Consultant
- Mark Feldman, M.B.A.
Information Systems
The Gillette Company
- James F. Ferreira, M.B.A.
Information Systems
MBTA
- James J. Ferriter, M.B.A.
Health Professions
Carney Hospital
- William A. Ferson, M.A.
Economics
U.S. Dept. of Labor
- George W. Fiddler III, M.B.A.
Accounting
Avco Computer Services
- Stephen L. Fielding, M.A.
Anthropology/Sociology
Northeastern University
- Barbara Ann P. Filo, Ph.D.*
History
- William D. Finan, Ed.D.
Mathematics
- Charles A. Findley, Ph.D.*
Speech
- Francis X. Finigan, B.S.*
Mathematics
Winchester Public Schools
- Joseph L. Finigan, M.Ed.
Mathematics
Rivers School
- Albert J. Finney, Jr., B.S.*
Accounting
Raytheon Co.
- Charles Fischer, Jr., M.S.
Finance
Digital Equipment Corp.
- Daniel H. Fisher
Health Professions
Bioran Medical Laboratory
- Harold R. Fisher, J.D.
Information Systems
- William H. Fisher, M.Ed.
Anthropology/Sociology
Northeastern University
- Charles E. Fiske, C.A.G.S.
Law Enforcement
Boston Univ. School of Med.
- Pennryn Fitts, M.A.
Law Enforcement
Chelmsford Police Department
- Edward A. Fitzgerald, M.A.
Political Science
Northeastern University
- Leo J. Fitzgerald, M.B.A.*
Industrial Management
General Electric Co.
- Kevin T. Fitzpatrick, M.B.A.*
Finance
Boston Public Library
- J. Joseph Fitzsimmons, M.B.A.
Management
Polaroid Corp.
- Mary-Jane Fitzsimmons, M.B.A.
Health Professions
MCI 1
- Richard E. Flaherty, M.P.A.
Law Enforcement
Metropolitan District Police
- Frances B. Fleming, B.F.A.
Art
Frances Fleming, Graphic Des.
- F. Garth Fletcher, A.S.
Information Systems
Fletcher Applied Science, Inc.
- David E. Floreen, M.P.A.*
Political Science
Massachusetts Bankers Assoc.
- Leo M. Flynn, M.B.A.*
Real Estate
Leo Flynn, R.E. & Appraising
- Peter E. Flynn, J.D.
Real Estate
Dept. of the Attorney General
- William B. Flynn, Ph.D.
Psychology
Merrimack Valley College
- Martin E. Foley, M.P.A.*
Law Enforcement
Massachusetts State Police
- Robert E. Foley, M.B.A.
Accounting
Northeast Econ. Action Research
- Jennifer Pn Foo, M.A.
Economics
Northeastern University
- Robert J. Forrest, Esq., J.D.
Accounting
Robert J. Forrest, P.C.
- Armand L. Fortin, B.S.
Purchasing
Honeywell, Inc.
- James Foss, Jr., LL.B.
Human Resources Management
Federal Mediation & Concil. Serv.
- Douglas G. Foster, M.Ed.*
Earth Science
City of Boston
- Gale P. Foster, B.S.*
Marketing
Samson Ocean Systems, Inc.
- Robert M. Fox, M.B.A.*
Marketing
Gerber Electronics
- Walter Foxtree, M.A.T.*
Art
University of Massachusetts
- Laura L. Frader, Ph.D.
History
Northeastern University
- Clifford J. Fralen, M.B.A.
Mathematics
Northeastern University
- Thomas B. Francis, Jr., M.P.A.
Human Resources Management
City of Boston

- Howard H. Freedman, M.S.*
Accounting
Raytheon Co.
- Peggy L. Freeman, M.Ed.
Health Professions
Kennedy Memorial Hospital
- Melvin W. Friedman, M.B.A.*
Management
M. W. Friedman Associates
- Daniel C. Frio, M.A.
History
Wayland High School
- Martha R. Fuller, M.S.
English
- Norbort L. Fullington, Ph.D.
History
Northeastern University
- Vincent J. Furlong, M.A.
Industrial Management
U.S. Government
- James I. Gabbe, M.S.
Journalism
James I. Gabbe, Writing & Pub.
- Neil A. Gaeta, Ph.D.
Radiology Technology
Food & Drug Admin.
- Brian A. Gagne, M.B.A.
Real Estate
City Corp. Real Estate
- W. Arthur Gagne, Jr., M.B.A.*
Management
Worcester Art Museum
- Kenneth W. Gagnon, B.S.
Law Enforcement
Mass. Dept. of Public Safety
- John M. Gale, M.B.A.
Radiology Technology
University Hospital
- Esther M. Gallagher, D.M.D.
Health Professions
Tufts University
- Richard R. Gallagher, B.A.
Information Systems
- Arthur R. Gallerani, Jr., M.B.A.
Management
Middlesex Community College
- Frank T. Gallo, Ph.D.
Health Professions
Gallo Associates, Inc.
- Gerald V. Galuardi, B.A.
Health Professions
New England Deaconess Hosp.
- Donald E. Garant, M.B.A.
Real Estate
Wakefield Savings Bank
- A. Newell Garden, B.S.
Journalism
Raytheon Co.
- Rawle W. Garner, M.B.A.
Law Enforcement
New England Business Corp.
- John D. Gavin, M.S.
Law Enforcement
Waltham District Court
- Paul C. Gay, J.D.*
Law
Barron & Stadfeld
- Augustus N. Gbosi, M.A.
Economics
Northeastern University
- Jonathan Gbur, M.B.A.
Transportation
Boston & Maine Corp.
- Gerard J. Geant, M.B.A.
Real Estate
Hannaford Bros. Company
- Sandra E. Geer, M.Ed.
Psychology
U. Mass.-Boston
- Samuel S. Geller, M.B.A.
Accounting
McCormack & Dodge Corp.
- John R. Geraghty, M.B.A.*
Management
Retired
- Anne M. Germain, Ph.D.
Information Systems
McCormack & Dodge Corp.
- Burton W. Gerrig, J.D.
Law Enforcement
Community Health
- Ara Ghazarians, M.A.
Anthropology/Sociology
Northeastern University
- David M. Ghazil, M.B.A.
Human Resources Management
Honeywell, Inc.
- Casimiro M. Giampaolo, M.D.
Cytotechnology
Mallory Institute of Pathology
- Peter F. Gibbs, M.B.A.
Transportation
Peter F. Gibbs & Associates
- Emanuel M. Gilbert, B.S.
Marketing
E. M. Gilbert Assoc.
- Edwin S. Giles, Jr., B.S.*
Information Systems
Massachusetts Teachers Assoc.
- Ruth Gilleran, M.B.A.
Accounting
The Gillette Company
- William J. Gillespie, Ph.D.
Health Professions
Northeastern University
- Gregory Gillis, Ph.D.
Biology
Bunker Hill Community College
- Ronald E. Gittens, B.A.
Anthropology/Sociology
Northeastern University
- Alan B. Gladstone, B.S.
Accounting
Alan Gladstone, C.P.A.
- Phyllis S. Glick, D.B.A.
Political Science
DFH/DFHS
- L. James Glinos, M.Ed.*
Human Resources Management
Glinos Associates
- Ronald C. Glover, J.D.
Human Resources Management
Digital Equipment Corp.
- Victor B. Godin, M.B.A.
Information Systems
Northeastern University
- Randolph P. Goetze, M.Ed.
Speech
- Stephen J. Golburgh, Ed.D.
Psychology
Self-Employed
- Linda S. Goldberg, C.A.G.S.
English
Northeastern University
- Robert L. Goldberg, M.B.A.*
Management
John Hancock Dist., Inc.
- Daniel Golden, Ph.D.
English
Northeastern University
- Kenneth E. Golden, M.B.A.
Information Systems
Frederick T. Golder, Esq., LL.M.*
- Frederick T. Golder
Human Resources Management
- Stan Goldman, J.D.*
Political Science
Mass. Dept. of Mental Health
- Harold M. Goldstein, Ph.D.
Economics
Northeastern University
- Howard I. Goldstein, J.D.
Law
Self-Employed
- M. Alvin Goldstein, A.B.*
Information Systems
Guil Resource Mgmt. Systems, Inc.
- Robert J. Goldstein, M.A.
Anthropology/Sociology
Northeastern University
- Roberta L. Golick, J.D.
Human Resources Management
- Judith R. Goodman, M.A.*
English
- Leon M. Goodman, M.B.A.*
Human Resources Management
Leon Goodman Associates
- Melissa Goodman, M.A.
English
Dept. of Psychiatry
- Robert S. Goodman, M.A.
Human Resources Management
Evans Products Co.
- Frederick R. Goodridge, M.B.A.
Transportation
Frederick Goodridge Assoc.
- Stephen Goodyear, M.A.
Modern Language
Hull Public Schools
- Adam H. Gordon, M.A.
Music
Northeastern University
- Daniel D. Gordon, M.A.*
Economics
Salem State College
- S. Peter Gorschel, LL.B.
Real Estate
Self-Employed
- Mary Jane Gorton, M.Ed.*
Art
Babson College
- Leslie C. Gosule, B.S.*
Accounting
C.P.A.
- Daniel Z. Gould, M.B.A.
Industrial Management
Instrumentation Labs
- Saeed Gozashti, M.S.
Chemistry
Northeastern University
- David F. Grace, C.A.G.S.*
English
Lasell Junior College
- Daniel A. Grady, M.B.A.*
Accounting
Bose Corp.
- William E. Grady, B.S.*
Industrial Management
Courier Corporation
- William H. Grass, M.A.
Music
Boston Conserv. of Music
- Leon S. Graubard, M.A.*
Economics
Worcester Polytechnic Institute
- Joseph L. Greaney, M.B.A.
Accounting
J. M. Cashman, Inc.
- Stephen S. Greene, B.S.
American Sign Language
Northeastern University
- Herbert J. Greenwald, Ph.D.
Psychology
Bridgewater State College
- Nina L. Greenwald, Ph.D.
Psychology
Bridgewater State College
- John T. Gregg, B.A.
Real Estate
Beal & Company
- Kristo A. Gregory, M.B.A.*
Finance
L. F. Rothschild, Unterberg, Towbin
- Theresa M. Gregory, B.S.
Music
- Ann M. Grenell, M.A.
Anthropology/Sociology
Boston College
- Gerald R. Griffin, Ph.D.*
English
Northeastern University
- J. Charles Griffith, B.A.
Management
- John L. Griffith, B.S.*
Management
State Dept. of Environmental Mgt.
- Joseph Grimaldi, M.A.*
History
First National Bank of Boston

- Duane L. Grimes, Ph.D.*
Political Science
Northeastern University
- Donna P. Grosjean, B.S.
Biology
Brigham & Women's Hospital
- Martin L. Gross, M.B.A.
Marketing
- Sidra Gruss, M.A.
Therapeutic Recreation
H. Lottman and Co., Inc.
- Ronald E. Guittarr, B.S.
Human Resources Management
Raytheon Co.
- Reginald W. Hache, M.A.
Music
Northeastern University
- Edward A. Hacker, Ph.D.*
Philosophy/Religion
Northeastern University
- Richard S. Haddad, M.B.A.
Accounting
Wang Laboratories
- Joanna Hadjicostandi, B.A.
Anthropology/Sociology
Northeastern University
- William T. Hadley, B.S.
Marketing
The Hadley Company
- Alphonse A. Haettenschwille, M.Ph.
Health Professions
Nashua Community Service Div.
- Martin H. Halabian, J.D.*
History
Nat. Assoc. Armenian Studs. Rsch.
- John P. Haley, C.A.G.S.
Information Systems
Revere High School
- Alice H. Hall, M.Ed.
Alternative Freshman Program
Northeastern University
- John F. Halloran, B.A.
Marketing
Internal Revenue Service
- Paul M. Halloran, B.S.*
Information Systems
Raytheon Co.
- Michael C. Halpern, B.S.
Information Systems
Commercial Union
- Pamela A. Halpern, M.S.
Information Systems
Northeastern University
- Donald J. Halpin, M.B.A.*
Finance
Winchester Fin. Mgt. Corp.
- Isadore Halzel, M.B.A.*
Management
Charles Stark Draper Lab., Inc.
- Jacalyn S. Hamada, B.A.*
Therapeutic Recreation
Boston University
- Curtis A. Hammar, B.A.
Music
Worcester Telegram
- Paula J. Hammett, B.S.
Health Professions
Framingham Union Hospital
- Susan C. Hammond, C.P.A.
Accounting
Etra Incorporated
- William F. Hancock, Jr., M.B.A.*
Finance
Digital Equipment Corp.
- Francis R. Hankard, M.A.*
Law Enforcement
Mass. Dept. of Public Safety
- William L. Hannah, Ed.D.
Psychology
Suffolk University
- Robert F. Hannon, M.B.A.
Economics
Sandwich High School
- Joseph J. Hansen, M.B.A.*
Mathematics
Raytheon Co.
- Norman E. Hansen, M.B.A.*
Marketing
D. W. Adams
- Ronald M. Hansen, Ph.D.
Psychology
Children's Hospital Medical Center
- Gerald I. Harel, Ph.D.
Economics
Mass. College of Pharmacy
- J. Steven Hargrave, B.S.
Information Systems
Digital Equipment Corp.
- Richard A. Hargreaves, M.A.
Mathematics
Westwood High School
- Priscilla G. Harmel, M.Ed.
Drama
- Joyce L. Harper, M.A.
English
Boston University
- David J. Harrigan, M.B.A.*
Management Sciences
D. J. Harrigan Associates
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Economics
Northeastern University
- Paul E. Harrington, B.A.
Economics
Northeastern University
- Francis A. Harris, M.A.
Economics
Northeastern University
- Ruth Ann M. Harris, Ph.D.*
History
Northeastern University
- Susan H. Harris-Sharples, Ed.D.
Alternative Freshman Program
Wheelock College
- David Harrison, B.A.
Management
- Thomas M. Hart, M.S.
Accounting
U.S. Treasury
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Mathematics
Salem State College
- Ruth Harutunian, M.S.
Mathematics
Watertown School Department
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English
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Digital Equipment Corp.
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The Seiler Corporation
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Northeastern University
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Heald Hoffmeister and Co.
- A. R. Heanue, B.A.
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Heanue Management Services
- James L. Hearn, M.B.A.
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Eastern Mass. PSRO
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W. K. Heckman Associates, Inc.
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McCormack and Dodge
- F. Timothy Hegarty, Jr., J.D.
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Commonwealth of Massachusetts
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Northeastern University
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- Maier M. Henary, B.S.
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Northeastern University
- Thomas R. Henderson, Jr., M.B.A.
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Polaroid Corp.
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- E. Dianne Hennessy, M.Ed.
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GTE
- George S. Hennessy, M.B.A.
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STC/SYS
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Northeastern University
- George M. Herrick, M.B.A.*
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John E. Cain Co.
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Xtrax Corp.
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Northeastern University
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Mass. Dept. of Mental Health
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Boston College
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Massachusetts State Police
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Boston Medical Center
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Northeastern University
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Div. of Employment Services
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Art
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New England Telephone Co.
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Northeastern University
- Charles E. Lawton, M.Ed.
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Rhode Island College
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Walpole High School
- Paul J. Le Blanc, M.A.
English
Boston College
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Revere Police Department
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First National Bank
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Attorney at Law
- Constance Leigh, M.A.
English
- Martha A. Leinroth, M.F.A.
Art
Most Media
- D. Paul Leitch, Ph.D.
Psychology
U.S. Army Natick R&D Command
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Chemistry
Northeastern University
- Philip W. Lequesne, Sc.D.
Chemistry
Northeastern University
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- Marvin X. Lesser, Ph.D.
English
Northeastern University
- Caren V. Leve, M.A.
Music
- Albert M. Levenson, M.B.A.*
Management Sciences
Charles Stark Draper Lab., Inc.
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Information Systems
Massachusetts General Hospital
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Management
C. T. Main Corporation
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Management
U.S. Environment Agency
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Industrial Management
Raytheon Co.
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Information Systems
Raytheon Co.
- Frank M. Limoncelli, B.S.
Marketing
Boston Globe
- Kenneth E. Lindauer, Esq., J.D.
Anthropology/Sociology
Law Office of K. Lindauer, P.C.
- Joanne G. Linowes, M.A.*
Speech
Research Communications, Inc.
- Robert L. Litrownik, Ph.D.
Psychology
Mystic Valley Mental Health Ctr.
- Thomas E. Littlehale, M.Ed.*
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John Hancock Life Ins.
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Beth Israel Hospital
- Joseph S. Locastro, Ph.D.*
Psychology
Boston Medical Center
- Hugh G. Loebner, Ph.D.
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Commonwealth of Massachusetts
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Newton-Wellesley Hospital
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Management
Interactive Management Systems
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Commercial Union Insurance
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Northeastern University
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- Hope E. Luder, M.A.
History
Burlington High School
- Barbara E. B. Lundeen, M.A.
English
Digital Equipment Corp.
- Richard I. Lustig, Ph.D.
English
Cullinane Database Systems
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Law
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The Gillette Co.
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Human Resources Management
C. J. Mabardy, Inc.
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N.E. Medical Center Hospital
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City of Newton
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Town of Norwood
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Registry of Motor Vehicles
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Music
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Prime Computer, Inc.
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Human Resources Management
Stop & Shop Companies, Inc.
- Leonard F. Meuse, Jr., M.B.A.
English
Polaroid Corp.
- Michael E. Meyer, Ph.D.
Journalism
Northeastern University
- Paul Miao, Ph.D.
Biology
Tufts USDA Human Nutrition Ctr.
- Jordan B. Michael, M.B.A.
Marketing
Boston College
- Bernard Michaels, M.A.
Anthropology/Sociology
Northeastern University
- Ronald L. Michaud, Ph.D.
Psychology
Perkins School for the Blind
- Elmer B. Michelson, M.A.*
English
Sylvia J. Mignon, M.A.
- Anthropology/Sociology*
Philip R. Miles, M.B.A.
Accounting
Polaroid Corp.
- Adriene R. Miller, M.A.
Anthropology/Sociology
Northeastern University
- Charles J. Miller, M.S.
Information Systems
J&J Corrugated Box Corp.
- Dennis H. Miller, Ph.D.
Music
Northeastern University
- James W. Miller, B.S.
Management
Bunker Hill Comm. College
- Pearline M. Miller, M.Ed.
Reading
Massachusetts Institute of Technology
- Stephen R. Miller, M.L.S.
Library Science
Wellesley Free Library
- Patrick N. Mingolelli, M.B.A.
Accounting
GTE International LTG Group
- Helena C. Minton, M.F.A.
English
University of Lowell
- Richard R. Miranda, M.B.A.
Purchasing
Multibank Financial Corp.
- Nityananda Misra, M.B.A.
Industrial Management
Dennison Mfg. Co.
- Amita Mody, M.A.*
Anthropology/Sociology
Northeastern University
- Charles E. Mokotoff, M.A.
Music
James A. Molloy, B.S.
- Transportation*
Raytheon Data Services
- James F. Molloy, Jr., M.B.A.
Transportation
Northeastern University
- Stephen P. Molloy, R.R.A., B.A.
Health Professions
Lowell General Hospital
- Abdul Momen, M.P.A.
Economics
Northeastern University
- Lawrence F. Monaghan, B.S.
Information Systems
First National Bank of Boston
- Robert R. Montgomery, B.A.
Radiology Technology
Brigham & Women's Hospital
- Robert L. Montminy, B.S.
Information Systems
Marshfield School Department
- Rajen Mookerjee, M.A.
Economics
Northeastern University
- John L. Moore, M.F.A.
Art
Design Group of Boston
- Patricia A. Moore, M.A.
Health Professions
Laboure Junior College
- Patricia J. B. Moran, M.Ed.
Mathematics
Saugus High School
- Leslie B. Morash, M.B.A.*
Transportation
Service Warehouse Co.
- William R. Morin, B.S.
Information Systems
MBTA
- Jerry A. Morris, M.B.A.*
Human Resources Management
Asquith & Jackson Assoc., Inc.
- Richard M. Morrison, M.B.A.*
Information Systems
Strategic Planning Institute
- William E. Morrison, Jr., M.B.A.*
Human Resources Management
Self-Employed
- Peter J. Morrissey, B.S.
Information Systems
MBTA
- Mark B. Moss, Ph.D.
Psychology
Henry A. Moultrie II, M.B.A.
- Management*
Mission Church of Christ, Inc.
- Edmond J. Moussally, M.Ed.
Music
Northeastern University
- Carl F. Moxey, Ph.D.
Biology
Self-Employed
- James D. Mukjian, M.B.A.*
Industrial Management
U.S. Defense Logistics Agcy.
- Paul V. Mulkern, M.S.*
Human Resources Management
Retired
- Robert W. Mullaly, Ph.D.
Psychology
Spofford Hall
- Edmund J. Mullen, M.Ed.*
History
Northeastern University
- Francis E. Mullen, B.S.*
Law Enforcement
Quincy Police Department
- William S. Mullen, M.A.
Political Science
Foxboro School System
- Charles W. Murphy, M.B.A.*
Finance
Bunker Hill Comm. College
- Daniel C. Murphy, M.S.
Journalism
Beverly-Peabody Times
- George E. Murphy, J.D.
Management Sciences
Polaroid Corp.
- James F. Murphy, B.S.
Law Enforcement
Haverhill Police Dept.
- Paul J. Murphy, J.D.*
Management
General Electric Co.
- Richard T. Murphy, M.Ed.
Mathematics
Boston Public Schools
- John A. Mylotte, B.A.
English
Navy Cloth & Text Research Fac.
- Roland L. Nadeau, M.A.*
Music
Northeastern University
- Shashi Nath, Ph.D.*
Anthropology/Sociology
Barbara E. Neale, M.Ed.
- Speech*
Independent Concept Consult.
- William P. Needham, M.A.
Psychology
Northeastern University
- Theodore H. Needle, B.S.*
Accounting
Needle & Needle
- Mitchell J. Nelles, Ph.D.
Biology
Cambridge Research Lab
- David C. Nelson, B.S.*
Accounting
David C. Nelson
- Martin A. Nemzow, B.S.
Information Systems
Solvation, Inc.
- Therese M. Newman, M.A.
English
Houghton Mifflin
- Thomas J. Neylon, Jr., M.A.*
English
Watertown Public Schools
- Janet M. Nichols, M.B.A.
Management
IDE Corp.
- Bruce E. Nickerson, Ph.D.
Anthropology/Sociology
Stone & Webster Engineering
- Judith Nierenberg, M.Ed.
Anthropology/Sociology
Documentary Educ. Resources
- Marion L. Nierintz, C.A.G.S.
Human Resources Management
John Hancock Mutual Life Ins.
- Gunnar Y. Nilsson, B.A.
Art
Hewlett-Packard Co.
- Toni M. Noah, M.F.A.
Art
James C. Nolan, M.S.W.
- Human Resources Management*
MBTA
- Richard W. Norton, B.A.*
Information Systems
The Foxboro Company
- Vincent G. Norton, M.B.A.
Human Resources Management
Raytheon Co.
- Edward G. Novello, M.B.A.*
Transportation
Best T&D Assoc.
- Alexander S. Nunes, M.S.
Information Systems
North American Systems Eng.
- Jane M. Nunes, B.A.
American Sign Language
Northeastern University
- Norbert F. Nunes, M.A.
English
Mass. Bay Community College
- Daniel Nyangani, M.A.
Anthropology/Sociology
Northeastern University
- Clement O'Brien, M.B.A.
Marketing
Digital Equipment Corp.
- David H. O'Brien, M.B.A.*
Accounting
N. E. Merchants Bank
- Ellen G. O'Brien, M.Ed.
Human Resources Management
Xerox Corporation

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- John E. O'Brien, M.B.A.
Human Resources Management
Massachusetts Hospital Assoc.
- Marie M. O'Brien, Ph.D.
Marketing
University of Lowell
- Richard J. O'Brien, B.S.
Information Systems
Massachusetts General Hospital
- Robert M. O'Brien, B.S.*
Information Systems
Northeastern University
- William T. O'Brien, M.P.A.*
Law Enforcement
Boston Police Department
- Frederick T. O'Connell, J.D.
Accounting
Internal Revenue Service
- Gerard J. O'Connell, Jr., J.D.
Finance
Honeywell Information Systems
- Daniel F. O'Connor, M.S.*
Information Systems
Nixdorf Computer Corp.
- Edward J. O'Connor, B.A.
Information Systems
Processing Management, Inc.
- John B. O'Donnell, M.Ph.
Health Professions
Mass. Dept. of Public Health
- George C. O'Grady, B.A.
Information Systems
Digital Equipment Corp.
- Joseph A. O'Keefe, M.Ed.
Law Enforcement
Dept. of Public Safety
- Marta Rosso O'Laughlin, M.A.
Journalism
Northeastern University
- Kelley J. O'Leary, B.A.
Drama/Speech
Stoneham Independent
- Shelagh K. O'Rourke, M.Ed.
Anthropology/Sociology
Harvard University
- Freya E. Oberle, B.A.
Music
- Aileen J. Ofer, M.A.*
English
- Suzanne Ogden, Ph.D.
Political Science
Northeastern University
- Ernest Oliveira, Jr., M.B.A.*
Industrial Management
General Electric Co.
- Wayne J. Oliver, M.A.
Economics
Algonquin Gas Transmission
- Gerald F. Olsen, M.B.A.
Accounting
Digital Equipment Corp.
- George C. Olson, M.B.A.*
Information Systems
Home Savings Bank
- Kirtland H. Olson, M.A.
English
The Harvard Group
- Ronald K. Olson, B.A.*
Information Systems
Prime Computer
- David S. Omar, M.B.A.*
Economics
Dean Junior College
- James W. O'Neil, A.B.*
Law Enforcement
Security Consultant
- Dorothy M. Oppenheim, M.B.A.
Management
Northeastern University
- Nancy P. Orton, B.A.
English
- George J. O'Shea, Jr., M.S.W.
Law Enforcement
Division of Youth Services
- Richard H. O'Shea, M.P.A.
Law Enforcement
State of N.H.—Dept. of Education
- Gary S. Osmond, M.B.A.
Finance
Raytheon Co.
- Linda C. Ott, M.A.
Music
Northeastern University
- Susan M. Ott, M.A.
Psychology
Northeastern University
- Albert J. Ottariano, Ph.D.*
Economics
U.S. Dept. of Labor
- Carol A. Owen, Ph.D.
Anthropology/Sociology
Northeastern University
- Richard W. Paine, Ph.D.*
Psychology
- William B. Palacio, M.B.A.
Accounting
- Howard R. Palmer, J.D.*
Law Enforcement
Office of the Attorney General
- Celeste D. Parsons, B.S.
Health Professions
Children's Hospital
- Robert A. Parsons, M.B.A.
Management Sciences
Northeastern University
- Virginia C. Parsons, M.A.
English
Northeastern University
- S. Jack Pashoogian, B.S.
Mathematics
- Paul S. Paslaski, M.B.A.
Information Systems
Digital Equipment Corp.
- Herbert S. Patchell, M.A.
Philosophy/Religion
- Theodore C. Patrikas, B.S.*
Management
General Electric Co.
- David F. Pauling, M.A.*
Modern Language
Northeastern University
- Neal S. Peachey, M.A.
Psychology
Northeastern University
- Joseph V. Pearincott, Ph.D.
Biology
Northeastern University
- Joseph C. Pedula, B.S.
Human Resources Management
The Gillette Co.
- William B. Peirce, M.B.A.
Finance
Cape Cod Community College
- Robert A. Pelletier, B.S.
Information Systems
Commercial Union Assurance Co.
- Katherine N. Pendergast, M.Ed.
Human Resources Management
Northeastern University
- Martin L. Pendleton, Jr., B.S.*
Information Systems
Agency Management Systems
- Carroll E. Pennell II, M.A.I., M.B.A.*
Real Estate
The Beal Companies
- Sallyann Penta, M.B.A.
Accounting
Towle Manufacturing
- William A. Percy, Ph.D.*
History
U. Mass.—Boston
- Timothy P. Perkins, M.A.
English
Northeastern University
- William K. Perkins, B.S.E.E.
English
Motorola
- William J. Peros, M.S.
Biology
Northeastern University
- Harry J. Perreault, B.S.
Information Systems
Liberty Mutual Ins. Co.
- Richard A. Perrin, M.B.A.
Information Systems
Massachusetts General Hospital
- Peter E. Perroncello, M.S.
Law Enforcement
Norfolk County Sheriff Dept.
- Curtis M. Perry, M.B.A.
Accounting
Keith Junior High School
- Eileen C. Perry, B.S.
Health Professions
Lahey Clinic Medical Center
- Daniel Pershonok, Ph.D.*
Psychology
Harvard Medical School
- Stuart S. Peterfreund, Ph.D.
English
Northeastern University
- Frederick D. Peterson, M.A.
Anthropology/Sociology
Merrimack College
- Ausrele M. Petronis, M.Ed.*
English
Petronis & Goldman Assoc.
- Marie J. Philip, B.A.
American Sign Language
Northeastern University
- Peter T. Philliou, Ph.D.*
Mathematics
Wentworth Institute
- Eugene Piazza, B.S.
Finance
Quincy Junior College
- Lawrence M. Pidgeon, J.D.
Law
Attorney at Law
- Robert E. Pieciewicz, M.S.
Management
American Mutual Liability Ins.
- George G. Pierce, J.D.*
Law
U.S. Government
- Karen L. Pierce, A.S.
Information Systems
- Kent Pierce, B.S.
Information Systems
Northeastern University
- Benjamin E. Pike, M.B.A.*
Human Resources Management
Massasoit Community College
- Joseph G. Pike, M.A.
Health Professions
VAMC—Brockton, Mass.
- Karen F. Pike, M.Ed.
Art
- Gerald T. Pineault, M.B.A.*
Industrial Management
Polaroid Corp.
- Katherine G. Pinell, B.A.
Anthropology/Sociology
Northeastern University
- Garth I. Pitman, Ph.D.*
English
Trident Regional High School
- Carmen S. Pizzuto, Ph.D.*
Law Enforcement
Dept. of Youth Services
- Harlan B. Plumley, M.B.A.
Finance
Digital Equipment Corp.
- Gladys M. Polansky, M.A.*
English
- Terry L. Poling, M.A.
Speech
Engineering
- Martha Pollak, Ph.D.
Art
MIT School of Architecture
- Richard W. Pomeroy, B.A.
Information Systems
Pomeroy Associates
- Charles J. Porfert, M.S.
Security
U.S. Environ. Protection Agency

*Denotes senior lecturer as of October 1983.

- John D. Post, Ph.D.*
History
Northeastern University
- Sylvia Poster, M.B.A.
Management
Bridgewater State College
- Joseph L. Potts, M.B.A.
Finance
Burgess & Leith, Inc.
- Lois H. Poulin, Ph.D.
English
Northeastern University
- James E. Poulos, M.A.
English
Northeastern University
- Edward J. Powers, M.B.A.*
Industrial Management
Self-Employed
- Stephen J. Powers, M.S.
Information Systems
Avco Everett Research Lab.
- Steven J. Pozzi, M.A.
Economics
Northeastern University
- Allen P. Prevade, B.A.
Information Systems
Digital Equipment Corp.
- Michael J. Princi, J.D.
Law Enforcement
Garnick & Princi, P.C.
- Alfred Prokop, M.S.
Health Professions
Gibco Laboratories
- Wayne H. Pueschel, B.A.
English
Prime Computer
- Edward V. Puopolo, J.D.*
Law
Puopolo & Carr, Attorneys
- Carlton Purcell, M.B.A.
Information Systems
Purcell and Associates
- Abdul Quayyum, M.S.
Economics
Northeastern University
- Daniel F. Quinn, M.A.
Information Systems
Northeastern University
- Frank B. Quirk, M.A.
Information Systems
Commonwealth of Massachusetts
- Leslie S. Radcliffe, M.A.
English
Computervision Corp.
- Kenneth A. Radnofsky, M.A.
Music
New England Conservatory
- Hugh P. Rafferty, M.A.
Law Enforcement
Acme Marble & Granite Co.
- Anisur Raham, M.A.
Economics
Northeastern University
- William V. Ramaskewich, Jr., B.S.
Therapeutic Recreation
Kennedy Center/Child Dev.
- Malati Ramratnam, Ph.D.
English
Charles T. Main
- Lewis M. Randa, B.S.
Therapeutic Recreation
Life Experience School
- Lorin J. Randall, M.B.A.
Finance
Digital Equipment Corp.
- Nathaniel C. Raymond, Ph.D.
Anthropology/Sociology
Univ. Mass. Harbor Campus
- Bernard R. Redgate, M.S.
Information Systems
Framingham Public School
- Caroline B. Rees, M.A.
History
International Institute
- Denis G. Regan, Esq., J.D.*
Law
Self-Employed
- Richard M. Regan, LL.B.*
Human Resources Management
State Street Bank & Trust
- Lucio E. Rehbein, M.A.
Psychology
Northeastern University
- William M. Reiff, Ph.D.
Chemistry
Northeastern University
- Richard M. Reilly, M.A.
Human Resources Management
American Arbitration Assoc.
- William J. Rennie, M.B.A.
Transportation
Boston & Maine Railroad
- Evan B. Rich, M.B.A.
Finance
Stone & Webster Eng. Corp.
- Peter J. Richards, M.A.
History
Massachusetts Historical Soc.
- Herbert L. Richmond, C.A.G.S.
Therapeutic Recreation
Area II Homecare Senior Ctr.
- David S. Richwine, M.A.
Journalism
United Press International
- Mary E. Ridge, M.P.A.
Law Enforcement
Northeastern University
- Stephen L. Ridge, M.B.A.
Accounting
Textron
- Frederick W. Riley, J.D.*
Law Enforcement
Asst. Attorney General
- J. Scott Riley, B.S.*
Marketing
JSR Associates, Inc.
- William J. Riley, M.Ed.
Law Enforcement
Brookline Police Department
- Virginia C. Risse, M.Ed.
Anthropology/Sociology
Mass. Mental Health Center
- Daniel J. Roberts, M.Ed.
Accounting
Northeastern University
- Frank M. Robinson, Jr., C.A.G.S.
Therapeutic Recreation
Northeastern University
- Holbrook C. Robinson, Ph.D.
Modern Language
Northeastern University
- Raymond H. Robinson, Ph.D.
History
Northeastern University
- Leo F. Roche, Jr., LL.B.*
Finance
Darling & McLaughlin
- Cephas B. Rogers, M.B.A.*
Industrial Management
Digital Equipment Corp.
- William H. Rogers, M.Ed.
Transportation
Wang Laboratories
- Theodore Role, M.A.
Human Resources Management
Arbitrator
- Irene L. Roman, M.Ed.
Accounting
Newton North High School
- Lawrence J. Romano, M.A.*
Modern Language
Charles Stark Draper Lab., Inc.
- Robert N. Romanowski, M.A.
Law Enforcement
First Security Services
- Robert R. Romeo, Jr., B.A.
Information Systems
Raytheon Co.
- Fred A. Rosenberg, Ph.D.
Biology
Northeastern University
- Joel M. Rosenfeld, M.S.*
Industrial Management
Strategic Planning Institute
- Norma P. Rosin, M.Ed.
Alternative Freshman Program
Northeastern University
- Richard S. Ross, M.A.
History
Louis J. Rossi, Jr., M.B.A.
- Louis J. Rossi, Jr., M.B.A.
Accounting
National Fire Protection Assoc.
- Robert J. Roth, B.B.A.*
Law Enforcement
Retired
- James R. Rowell, Jr., Ph.D.
Information Systems
North Shore Community College
- Gerald G. Roy, Jr., B.S.
Biology
Northeastern University
- Richard N. Roy, M.B.A.*
Transportation
Stone & Webster Eng. Corp.
- Gerald R. Rubin, B.S.*
Accounting
Greene Rubin & Miller
- Louis Rudzinsky, B.S.*
Management
Louis Rudzinsky Assoc., Inc.
- Thomas R. Rutishauser, B.S.
Music
Frank L. Ryan, Ph.D.*
- Frank L. Ryan, Ph.D.*
English
Stonehill College
- P. Barry Ryan, Ph.D.
Chemistry
Harvard School of Public Health
- Charles M. Ryder, M.B.A.
Management
N.E. Mutual Life Ins. Co.
- John D. Ryder, M.B.A.*
Accounting
SCA Services, Inc.
- Frederick J. Rys, M.B.A.
Finance
New England Telephone Co.
- Alexander R. Rysman, Ph.D.
Anthropology/Sociology
Northeastern University
- David J. Sack, B.S.*
Radiology Technology
Brigham & Women's Hospital
- Thaddeus P. Sadowski, M.Ed.*
Mathematics
North Quincy High School
- Loulseged Sahl, M.A.
Economics
Northeastern University
- Carol R. Saivetz, Ph.D.
Political Science
Northeastern University
- Tadashi Sakamoto, M.A.
Modern Language
Charles L. Sakey, M.A.*
- Charles L. Sakey, M.A.*
Modern Language
Boston Latin School
- Mary E. Salus, M.A.
Anthropology/Sociology
Mass. Dept. of Public Welfare
- James B. Sampson, Ph.D.
Psychology
U.S. Army Rsch. Inst. Envir. Med.
- Richard P. Samuels, M.S.M.E.*
Mathematics
N. E. Telephone & Telegraph Co.
- Paul E. Sanders, M.B.A.
Finance
Honeywell Information Systems, Inc.
- Yvonne L. Sandstroem, Ph.D.
Modern Language
Southeastern Mass. Univ.
- Jayant N. Sane, Ph.D.
Chemistry
The Gillette Company
- Richard H. Saracusa, M.B.A.
Information Systems
Polaroid Corp.

*Denotes senior lecturer as of October 1983.

- Ahmad Saranjampour, M.A.
Economics
Northeastern University
- Willis L. Saulnier, M.S.W.*
Human Resources Management
Creative Enterprises
- Stephen R. Savage, M.B.A.
Art
Centronics
- Eugene D. Savitt, M.D.
Health Professions
Forsyth Dental Center
- Eunice Schatz, M.A.
Women's Career Program
Life/Work Direction
- Frank T. Schettino, M.S.
Law Enforcement
Northeastern University
- Donald S. Scheufele, Ph.D.
Chemistry
Boston Public Schools
- John J. Schickling, M.B.A.
Accounting
Telesis Systems Corporation
- William J. Schmid, B.S.
Marketing
U.S. News & World Report
- Roy M. Schoenfeld, Esq., J.D.*
Human Resources Management
Natl. Labor Relations Board
- Harry G. Schortmann, Jr., M.B.A.
Management
Retired
- John Schryver, A.S.
Accounting
- Lucy J. Schuman, B.S.
Health Professions
Randolph School
- Daniel C. Scioletti, Jr., M.S.
Accounting
Robert Half Int'l., Inc.
- Frank J. Seegraber, A.B.*
Library Science
Boston College
- Harvey J. Segall, A.S.
Journalism
Harvey J. Segall, Photography
- Peter K. Seibert, M.B.A.
Transportation
Multisystems, Inc.
- Peter M. Selig, M.A.*
Economics
- Abu K. Selimuddin, M.A.
Economics
Northeastern University
- Patricia C. Selleck, B.S.
Radiology Technology
St. Ann's Hospital
- Peter Serenyi, Ph.D.*
Art
Northeastern University
- Anthony K. Sestokas, Ph.D.
Psychology
Northeastern University
- Kathleen M. Sevigny, M.B.A.
Accounting
Bridgewater State College
- John C. Shannon, M.A.*
Social Welfare
Suffolk University
- Robert J. Shannon, M.S.
Health Professions
VA Medical Center
- Ellen R. Shapiro, Ph.D.
Art
- Samuel Shapiro, M.B.A.*
Finance
Samuel Shapiro & Co., CPA, Inc.
- Garrett M. Sheehan, M.S.
Law Enforcement
Lowell Police Department
- Joseph R. Sheppeck, M.B.A.
Mathematics
Boston English High School
- Arthur Sherman, J.D.*
Law
Trial Court of Commonwealth
- Eliot H. Sherman, M.B.A.,
Finance
Pellon Corporation
- Stephen M. Shinnick, M.P.A.
Political Science
Norwood Public Schools
- Henrietta N. Shirik, Ph.D.
English
Software International Corp.
- Henrietta M. Shmase, B.A.
Health Professions
Health Record Admin. Program
- Alan R. Shneider, M.B.A.*
Accounting
Alan R. Shneider
- Ruth E. Shore, M.A.*
English
Fisher Junior College
- Paul M. Short, M.S.
Management
U.S. Army R&D Command
- Ronald A. Shulman, M.C.E.*
Marketing
Business Comm. Service, Inc.
- Andrew Silverman, M.S.
Accounting
Andrew Silverman, C.P.A.
- Herbert H. Silverman, Ed.D.*
Music
Northeastern University
- George H. Simmons, Jr., M.A.
Economics
Dept. of Public Utilities
- Michael L. Simmons, M.P.A.
Political Science
Commonwealth of Massachusetts
- S. Murray Simons, M.B.A.*
Accounting
Greater Lynn Men. Health & Ret.
- Lloyd A. Skiffington, Ph.D.*
English
Northeastern University
- Vernon Skipper, B.S.
Management
The Boston Company
- Stephen E. Slaner, M.Ph.
Political Science
Northeastern University
- Eric L. Small, M.S.*
Finance
Arthur D. Little, Inc.
- Bradley A. Smith, M.A.
English
- Donald O. Smith, Esq., J.D.
Law
Attorney at Law
- Eileen Smith, M.Ed.
Mathematics
Lexington School Department
- Frederick I. Smith, Jr., B.A.
Political Science
Commonwealth of Massachusetts
- Malcolm V. Smith, B.S.*
Mathematics
N.E. Mutual Life Ins. Co.
- Peter H. Smith, M.B.A.
Accounting
Honeywell Electro-Optics
- Robert W. Smith, B.S.
Human Resources Management
Northrop Corporation
- Stephen W. Smith, M.A.
History
Northeastern University
- Paul E. Snoonian, Sr., Ph.D.
Economics
University of Lowell
- Leo Snyder, M.S.*
Music
Northeastern University
- Nancy P. Snyder, M.S.
Psychology
Priscilla Hoffnang Associates
- Carlos M. Soares, M.A.
Psychology
Harvard University
- Edward J. Socha, M.B.A.
Management
Assabet Valley Reg. Voc. H.S.
- Harold P. Sock, Ed.D.
Women's Career Program
Gateway Counseling Services
- Susan S. Sock, M.Ed.
Women's Career Program
Mass. Bay Community College
- Sulo A. Soini, M.B.A.
Industrial Management
Commonwealth of Massachusetts
- Kenneth C. Solano, M.Ed.
Human Resources Management
Northeastern University
- Michelle A. Souda, M.A.
English
Northeastern University
- Alvaro M. Sousa, B.S.
Management
N. E. Mutual Life Ins. Co.
- Ed L. Sousa, M.Ed.
Information Systems
Northeastern University
- Robert V. Sparks, Ph.D.*
History
Mass. Historical Society
- Elliott Spector, Ph.D.
Law Enforcement
Northeastern University
- Robert M. Spector, Ph.D.*
History
Worcester State College
- John F. St. Cyr, LL.B.
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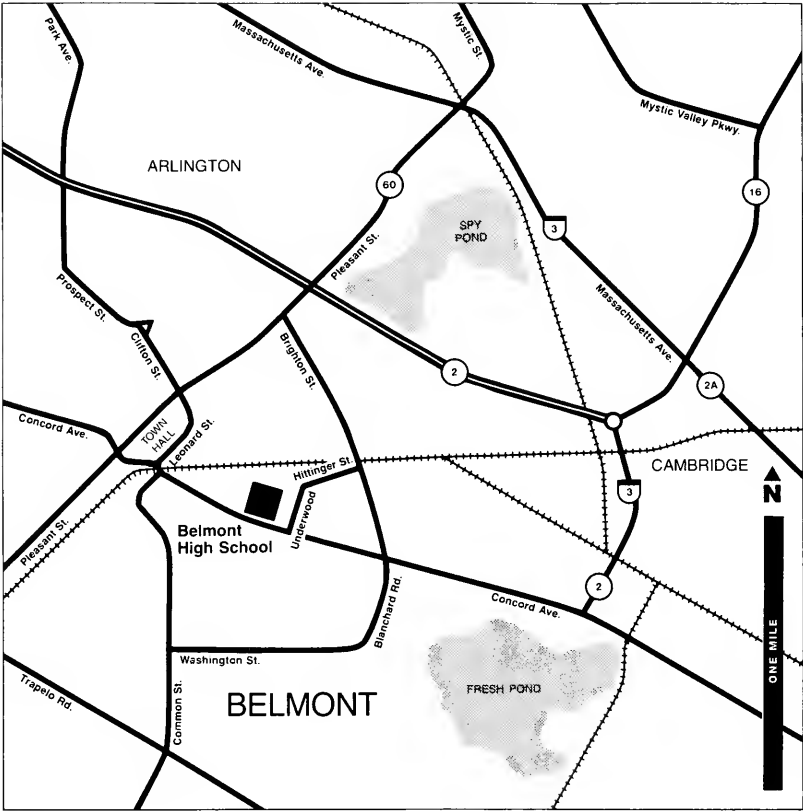
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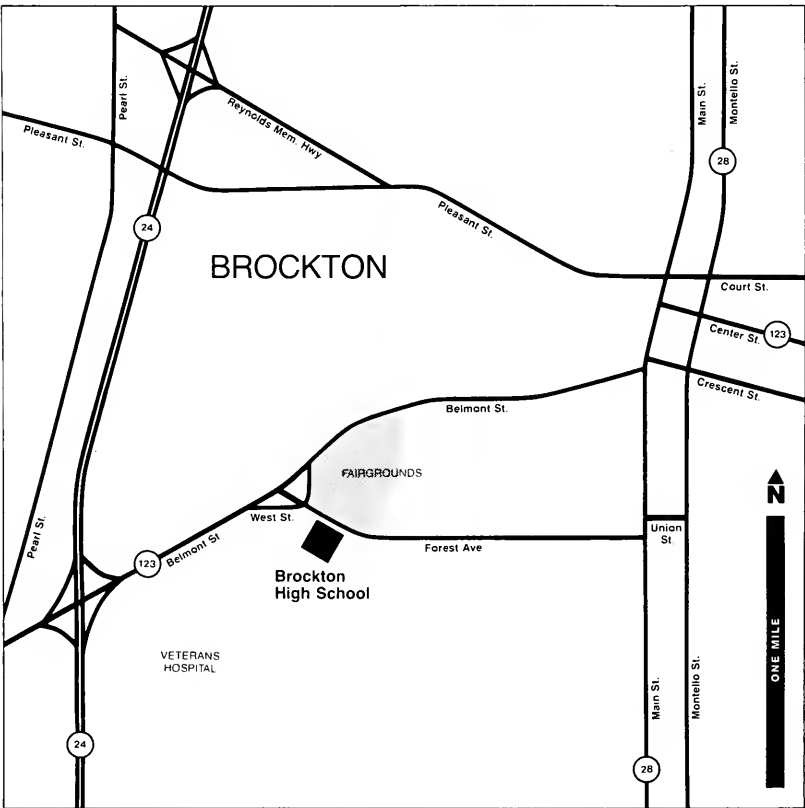
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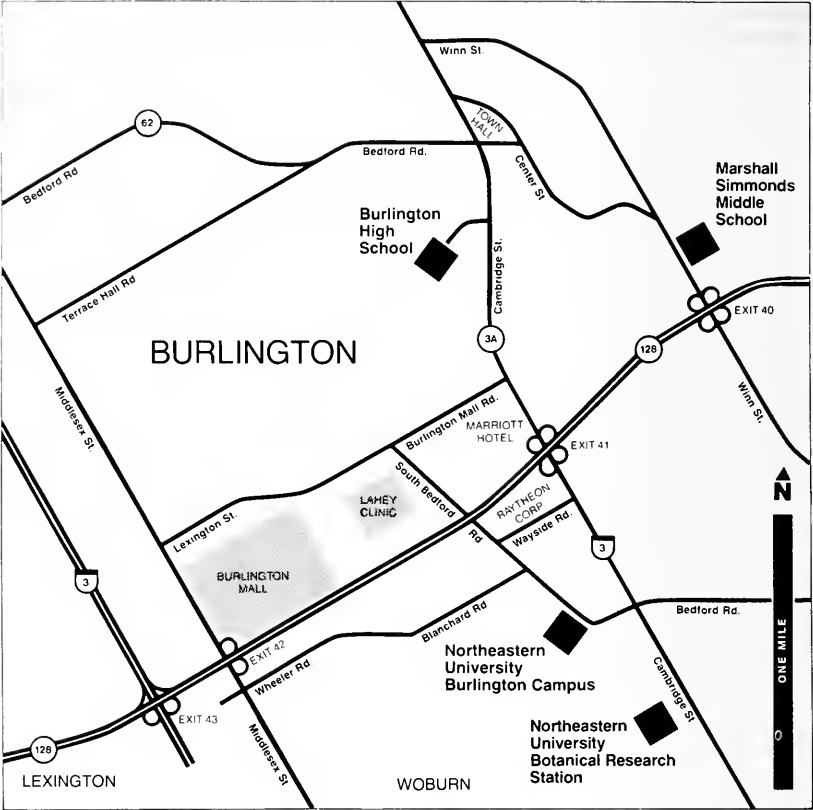


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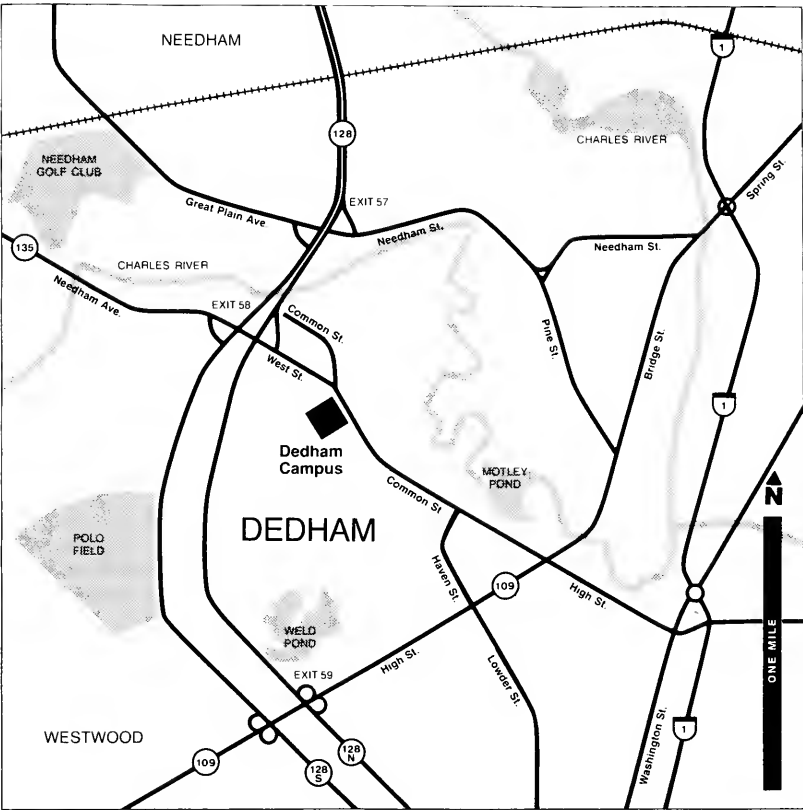
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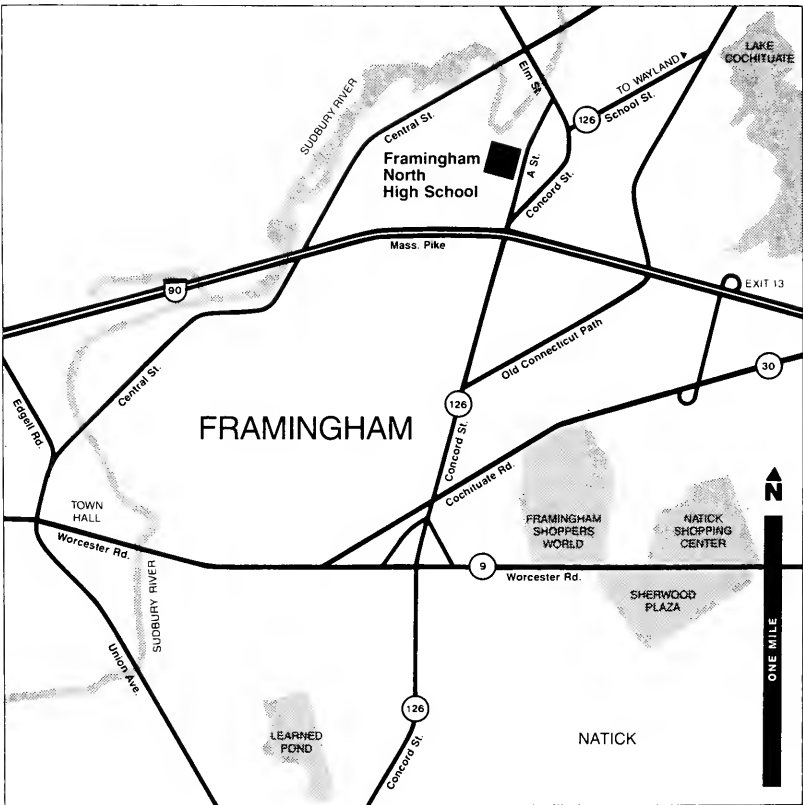
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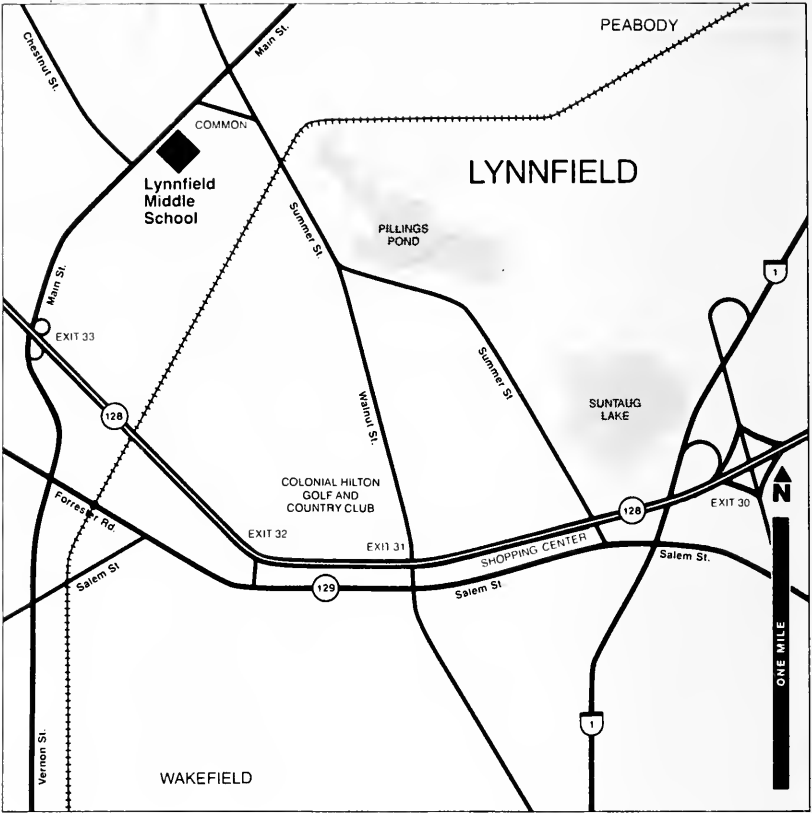
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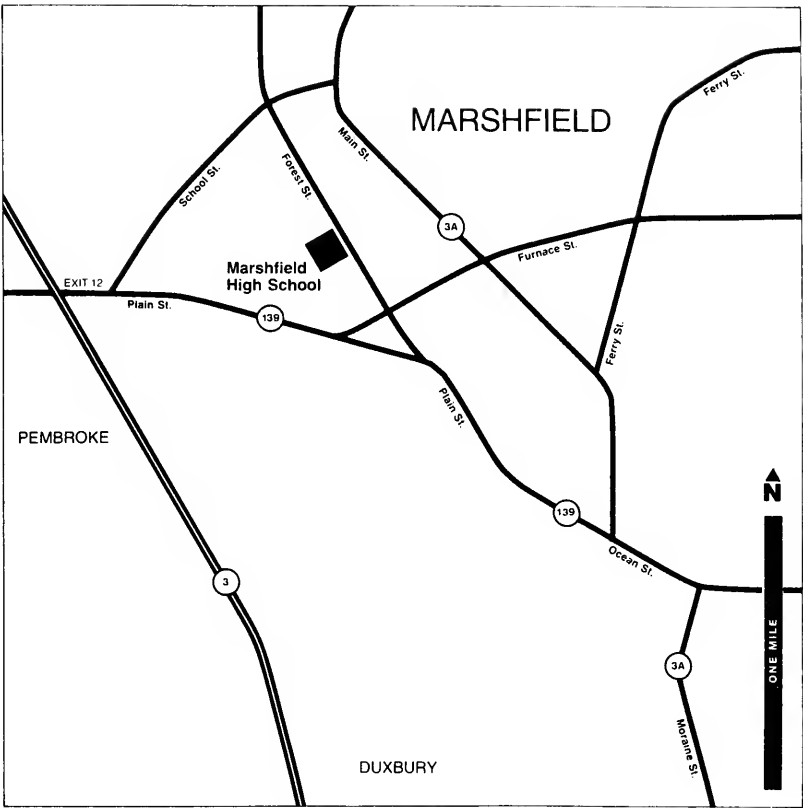
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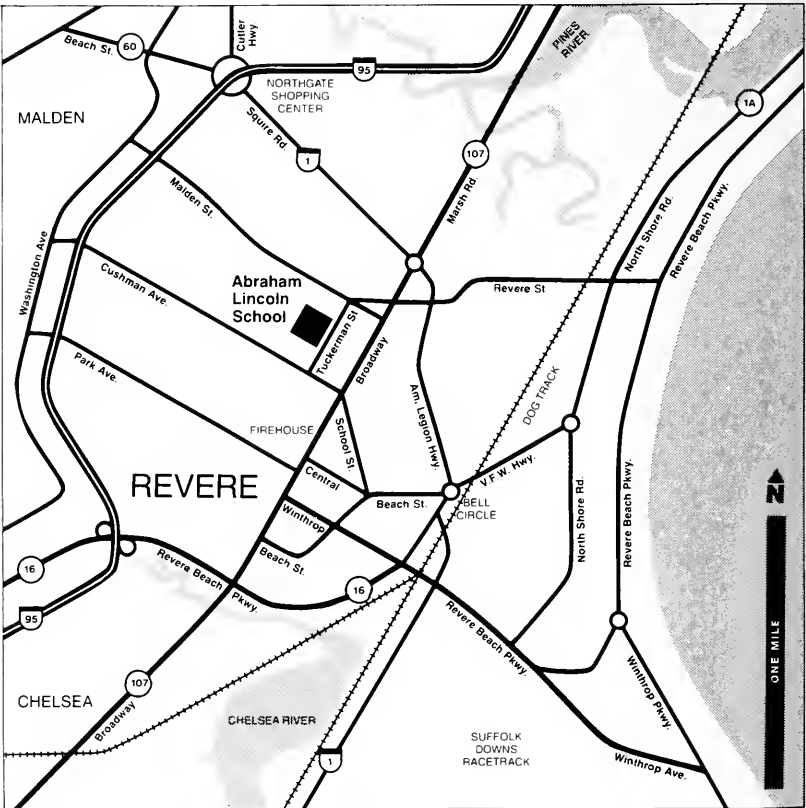
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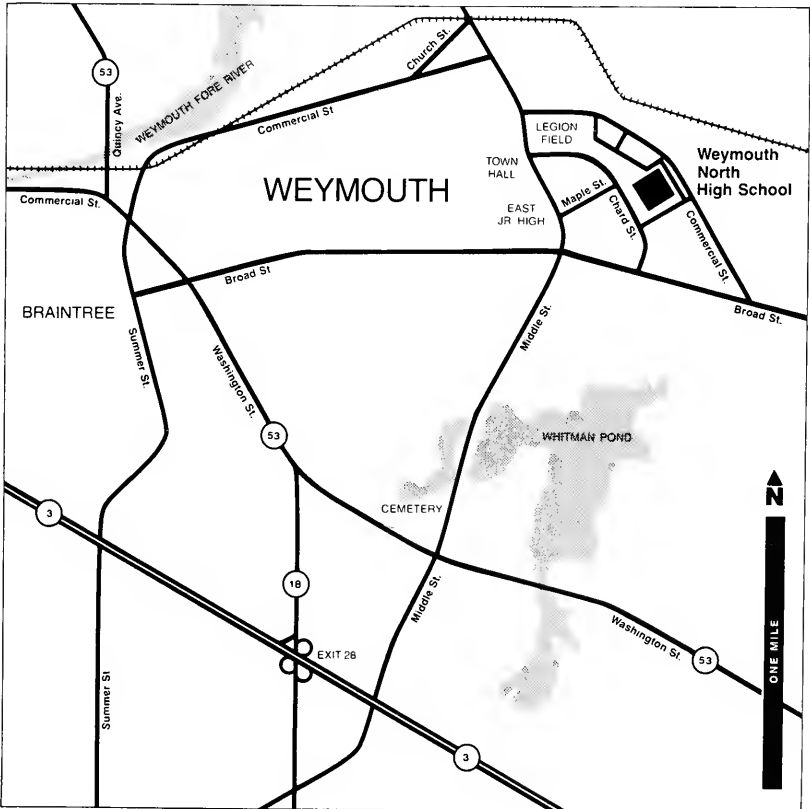
**Revere (Abraham Lincoln
School)
Tuckerman Street**



Westwood High School
Nahatan Street



Weymouth North High School
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1984 – 85

Basic Day Colleges Course Descriptions and Curriculum Guide

College of Arts and Sciences

Boston-Bouvé College of Human
Development Professions

College of Business Administration

College of Computer Science

College of Criminal Justice

College of Engineering

Lincoln College

College of Nursing

College of Pharmacy and
Allied Health Professions

University College Alternative

Freshman-Year Program

Northeastern University charges tuition for all courses taken above the normal academic load.

The University reserves the right to make changes in the regulations and courses announced in this bulletin.

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Delivery of Services

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements and acts of public authorities. The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities or performance, but its inability or failure to do so shall not subject it to liability.

The Northeastern University catalog contains current information regarding the University calendar, admissions, degree requirements, fees, and regulations, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, cancelling of scheduled classes and other academic activities and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

Northeastern will do its best to make available to you the finest education, the most stimulating atmosphere and the most congenial conditions it can provide. But the quality and the rate of progress of your academic career is in large measure dependent upon your own abilities, commitment, and effort. This is equally true with respect to professional advancement upon completion of the degree or program in which you are enrolled. The University cannot guarantee that you will obtain or succeed at any particular job; that will depend upon your own skills, achievement, presentation, and other factors such as market conditions at that time. Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern and they may vary from state to state and from country to country. While the University stands ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because the University has no other way of knowing what your expectations and understandings are.

In brief, the University is there to offer you educational opportunities and choices and to assist you in finding the direction in which you want to steer your educational experience. But you are a partner in this venture with an obligation and responsibility to yourself.

Antidiscrimination Policy

Northeastern University is committed to a policy of equal opportunity for all students and employees without regard to race, color, religion, sex, sexual preference, national origin, or handicap or veteran status. The University prohibits discrimination in all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance.

Equal Opportunity Employment Policy

Northeastern University is an equal opportunity employer. It is institutional policy that there shall be no discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or handicap or veteran status.

Northeastern also prohibits discrimination against any employee regarding upgrading, demotion or transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training. In addition, Northeastern adheres to Affirmative Action guidelines in all recruitment endeavors.

Further, Northeastern will not condone any forms of sexual harassment which is defined as the use of unwelcome sexual advances, requests for favors, and other verbal or physical conduct of a sexual nature: as an explicit or implicit condition of employment, as the basis for employment decisions or to interfere with an individual's work performance by creating an intimidating, hostile, or offensive work environment.

Inquiries concerning our equal opportunity policies may be referred to the University Title IX Coordinator/Compliance Officer for Section 504 of the Rehabilitation Act of 1973, Affirmative Action Office, Richards Hall. Telephone 617-437-2133.

Accreditation Statement

Northeastern University is accredited by the New England Association of Schools and Colleges, Inc., which accredits schools and colleges in the six New England states. Accreditation by the Association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators.

Children's Center

Northeastern University operates a Children's Center in 123 Forsyth Building. The Center is academically housed in the Boston-Bouvé College of Human Development Professions' Department of Curriculum and Instruction. Children from age 2 years and 9 months to 6 years are eligible. For further information, phone 617-437-3929.

College of Arts and Sciences

The College of Arts and Sciences offers students programs leading to two degrees in most majors: the Bachelor of Arts and the Bachelor of Science. Degree requirements for the options in each major are listed on the following pages. In addition to these requirements specified by the major department, the college has established certain minimum graduation requirements for its students. They are as follows:

Quantitative. Candidates for either the Bachelor of Arts or Bachelor of Science degree who entered in or after the fall quarter of 1974 must successfully complete 176 quarter hours of credit, of which 32 quarter hours may be taken outside the College of Arts and Sciences. In addition, only four quarter hours of Physical Education and no ROTC credits may be used to meet this requirement.

Residency. Candidates must complete either 75 percent of the degree credit or the last three full quarters (a minimum of twelve full courses) at Northeastern.

Qualitative. Candidates must achieve a minimum cumulative average of 2.0 (grade of C).

Freshman English. All degree candidates must complete one quarter of Freshman Composition and one quarter of Introduction to Literature. Normally, this requirement will be fulfilled by completing courses 30.113 and 30.114 at Northeastern.

All candidates for the Bachelor of Arts degree must attain the level of proficiency in a modern language indicated by either a passing grade at the intermediate level of a college language course or by meeting a comparable criterion approved by the Modern Languages Department.

A *conditional exemption* from this requirement may be granted to:

- 1) Students who earned an average grade of C or better in a full, four-year language sequence in secondary school or
- 2) Students who earned an average grade of A in a three-year language sequence in secondary school.

A conditional exemption *must* be confirmed by taking a proficiency examination during the student's first quarter at the University. A sufficiently high score will verify the exemption; otherwise the student will be advised to enroll in an appropriate language course in the following quarter.

An *absolute exemption* will be granted to students:

- 1) For whom English is a foreign language;
- 2) Who receive a score of 550 or better in a CEEB language achievement examination.

Students who have not met the foreign language requirement at the time of entrance will register for courses appropriate to the scope and level of prior study. The normal sequence for students with no prior preparation is two quarters of elementary-level language and two quarters of intermediate-level language. The Modern Languages Department will determine an appropriate entry point at which students who have partial language preparation may begin completing the requirement.

The College is also concerned that its students receive a broadly based liberal education. Thus, in addition to the above requirements, it has required that all Bachelor of Arts candidates fulfill a "Distribution Requirement." *The Distribution Requirement applies to all such students who entered prior to the fall of 1984 or for upperclass students who will enter in the fall of 1984.* Full details about this requirement are available in the Dean's Office.

However, all freshmen students, candidates for the Bachelor of Arts or the Bachelor of Science, who enter in the Fall of '84 or later must complete the "Core" curriculum. This curriculum replaces the Distribution Requirement and requires that courses be taken in the following areas:

- 1) Basic skills, both communicative and qualitative
- 2) Methods of inquiry
- 3) Alternative cultures and societies
- 4) Theoretical perspectives and changes
- 5) Current issues in perspective

The number of courses required in each category varies depending on whether one is a Bachelor of Arts or a Bachelor of Science candidate; full details of these distinctions and of courses that satisfy the various categories are available from academic advisers in the Dean's Office.

African-American Studies

Bachelor of Arts
Bachelor of Science

A major in African-American Studies offers background for a wide range of professions calling for understanding of intergroup relations and the minority experience. Students may go on to graduate study in such areas as social work, sociology, education, law, business, history, or the humanities.

Students majoring in African-American Studies may earn either the Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) degree. All majors are required to take the following set of courses.

AFR 1161	Economic Issues in Minority Communities
AFR 1280	Black Psychological Identity
AFR 1353	Research
AFR 1300	Directed Study
AFR 1121	African-American Literature
AFR 1240	Contemporary Issues in Black Society
AFR 1193	Africa Today
AFR 1131	African-American History
AFR 1171	Survey of Black Political Movements
AFR 1248	Race Relations in America

Faculty advisers work with students to help them select one or more "concentration clusters" (as described below) in African-American Studies to fulfill the distribution requirements for the Bachelor of Arts degree or the career-package program for the Bachelor of Science degree.

Minor in African-American Studies

A minor in African-American Studies is designed to meet the needs of students who major in other areas but have special interest in African-American Studies. To qualify for a minor, a student must earn 28 quarter-hour credits in the field, 12 of which must be from the set of courses required for majors. The remaining credits will be a concentration cluster arranged in consultation with a student's faculty adviser.

A concentration cluster is a set of four courses that focuses on a given aspect of African-American Studies. A cluster might focus on sociology-psychology, history, humanities, human service, research, or other areas related to the student's educational or career needs. Concentration clusters are arranged in consultations between the student and a faculty adviser.

Art and Architecture

Bachelor of Arts
Bachelor of Science

Major in Art: ART 1100, History of Art to 1400, and ART 1101, History of Art since 1400; twelve art electives; INT 1100, Introduction to Art, Drama, and Music; one music elective, one theatre and dance elective; and one elective from history, psychology, or philosophy.

Studio Art Concentration. Same requirements as for the art major, except for the art electives, for which are substituted: ten studio courses (ART 1124, Basic Drawing; ART 1127, Basic Painting; ART 1130, Foundations of Visual Design; ART 1132, Graphic Design I; ART 1138, Introduction to Printmaking; ART 1160, Basic Photography I; ART 1170, Filmmaking Workshop; ART 1250, Color Theory and Practice; ART 1254, Intermediate Drawing; and ART 1261, Basic Photography II), and four art history courses (ART 1213, Modern Painting; ART 1230, History of Photography; or ART 1233, Contemporary Directions in Photography; ART 1235, History of Film; or ART 1236, The American Film; and ART 1240, History of Graphic Design).

History of Art and Architecture Concentration. Same requirements as for the art major, except for the art electives, for which are substituted: eight history of art and architecture courses (ART 1200, Ancient Art and

Architecture; or ART 1203, Medieval Art and Architecture; ART 1204, Renaissance Art and Architecture; ART 1210, French Painting; ART 1213, Modern Painting; ART 1220, American Sculpture and Painting; or ART 1223, American Architecture; ART 1228, Contemporary Architecture and the City; ART 1230, History of Photography; or ART 1233, Contemporary Directions in Photography; and ART 1235, History of Film; or ART 1236, The American Film; or ART 1237, Contemporary Directions in Cinema), and six studio courses (ART 1124, Basic Drawing; ART 1127, Basic Painting; ART 1130, Foundations of Visual Design; ART 1150, Introduction to Architectural Design; ART 1160, Basic Photography I; and ART 1250, Color Theory and Practice).

Architecture Concentration. In collaboration with the Boston Architectural Center and leading to a Bachelor of Science degree. Same requirements as for the art major, except for the art electives for which are substituted: six architectural history courses (ART 1111, Introduction to Architecture; ART 1200, Ancient Art and Architecture; or ART 1203, Medieval Art and Architecture; ART 1204, Renaissance Art and Architecture; ART 1223, American Architecture; ART 1225, Technology, Architecture, and the City; and ART 1228, Contemporary Architecture and the City); three studio courses (ART 1150, Introduction to Architectural Design; ART 1124, Basic Drawing; and one art elective); five math/science courses (MTH 1123, Calculus; MTH 1124, Calculus; PHY 1221, Physics for Engineers I; PHY 1222, Physics for Engineers II; and one computer science elective); and six studio and four technical courses offered at the Boston Architectural Center.

Minors in Art

History of Architecture: ART 1111, History of Architecture; ART 1150, Introduction to Architectural Design; ART 1113, Architecture and the City; ART 1223, American Architecture; ART 1225, Technology, Architecture, and the City; and ART 1228, Contemporary Architecture and the City.

History of Art: ART 1200, Ancient Art and Architecture; ART 1203, Medieval Art and Architecture; ART 1204, Renaissance Art and Architecture; ART 1210, French Painting; ART 1213, Modern Painting; and ART 1220, American Sculpture and Painting.

Film and Photography: ART 1170, Filmmaking Workshop; ART 1236, The American Film; ART 1237, Contemporary Directions in Cinema; ART 1160, Basic Photography I; ART 1261, Basic Photography II; and ART 1233, Contemporary Directions in Photography.

General Minor: Selection of any six courses from the departmental curriculum.

Biology

Bachelor of Arts

BIO 1103, Principles of Biology I; BIO 1104, Principles of Biology II; BIO 1105, Vertebrate Systems, Bio III; BIO 1211, Environmental and Population Biology; BIO 1260, Genetics and Developmental Biology; BIO 1261, Cell Physiology and Biochemistry (formerly called Biology); four biology electives approved by department Advisory Committee.

Fundamentals of Mathematics or Calculus (one year); PHY 1201, PHY 1202, Physics for the Life Sciences I and II; PHY 1501, PHY 1502, Physics Laboratory for the Life Sciences I and II; or PHY 1231, Physics for Science Majors I; PHY 1233, Physics for Science Majors III; PHY 1531, PHY 1533, Physics Laboratory for Science Majors I and III; CHM 1111, General Chemistry; CHM 1122, General Chemistry II; CHM 1221, Analytical Chemistry; CHM 1264, CHM 1265, Organic Chemistry I and II.

Bachelor of Science

BIO 1103, Principles of Biology I; BIO 1104, Principles of Biology II; BIO 1105, Vertebrate Systems, Bio III; BIO 1211, Environmental and Population Biology; BIO 1260, Genetics and Developmental Biology; BIO 1261, Cell

Physiology and Biochemistry; BIO 1490, Senior Seminar; four biology electives approved by department Advisory Committee.

Calculus (one year); PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III; PHY 1531, PHY 1532, Physics Laboratory for Science Majors I and II; or PHY 1533, Physics Laboratory for Science Majors III; CHM 1111, General Chemistry; CHM 1122, General Chemistry II; CHM 1221, Analytical Chemistry; CHM 1264, CHM 1265, Organic Chemistry I and II; approved science electives.

Foreign language requirement.

Chemistry

Bachelor of Arts

CHM 1151, CHM 1152, General Chemistry I and II; CHM 1153, The Chemical Elements; CHM 1231, Analytical Chemistry; CHM 1271, CHM 1272, CHM 1273, Organic Chemistry I, II, and III; CHM 1391, CHM 1392, CHM 1393, Physical Chemistry I, II, and III; CHM 1431, Instrumental Analysis.

MTH 1143, MTH 1144, MTH 1145, Calculus I, II, and III; PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III; PHY 1532, PHY 1533, Physics Laboratory for Science Majors II and III.

Bachelor of Science

CHM 1151, CHM 1152, General Chemistry I and II; CHM 1153, The Chemical Elements; CHM 1231, Analytical Chemistry; CHM 1271, CHM 1272, CHM 1273, Organic Chemistry I, II, and III; CHM 1391, CHM 1392, CHM 1393, Physical Chemistry I, II, and III; MTH 1243, Calculus and Linear Methods I; or MTH 1223, Calculus; CHM 1431, Instrumental Analysis; CHM 1441, Inorganic Chemistry; CHM 1461, Identification of Organic Compounds; two advanced science or mathematics electives; one advanced laboratory.

MTH 1143, MTH 1144, MTH 1145, Calculus I, II, and III; MTH 1245, Differential Equations and Linear Methods I; or MTH 1225, Mathematical Analysis; PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III; PHY 1532, PHY 1533, Physics Laboratory for Science Majors II and III.

Minor in Chemistry

After a general chemistry sequence, CHM 1231, Analytical Chemistry; CHM 1271, CHM 1272, CHM 1273, Organic Chemistry I, II, III; CHM 1391, CHM 1382, Physical Chemistry I, II.

Economics

Bachelor of Arts

ECN 1115, ECN 1116, Principles and Problems of Economics I and II; ECN 1250, ECN 1251, Statistics I and II; ECN 1216, Microeconomic Theory; ECN 1215, Macroeconomic Theory; six economics electives.

MTH 1106, MTH 1107, Fundamentals of Mathematics I and II; four social science electives other than economics.

Bachelor of Science

ECN 1115, ECN 1116, Principles and Problems of Economics I and II; ECN 1250, ECN 1251, Statistics I and II; ECN 1216, Microeconomic Theory; ECN 1215, Macroeconomic Theory; ECN 1350, Introduction to Econometrics; or ECN 1351, Problems in Economic Research; ten economics electives.

MTH 1106, MTH 1107, Fundamentals of Mathematics I and II; four social science electives other than economics.

Minor In Economics

ECN 1115, ECN 1116, Principles and Problems of Economics I and II; ECN 1216, Microeconomic Theory; ECN 1215, Macroeconomic Theory; four electives in economics. Electives to be selected with the advice of a department adviser. Any course taken outside the Department of Economics to satisfy these economics elective requirements must be approved by a faculty adviser in the Department.

English

Bachelor of Arts

ENG 1126, Backgrounds to English and American Literature; ENG 1307, Approaches to Literature; ENG 1120, ENG 1121, Survey of American Literature I and II; two period courses; one figure course; one language and writing course; one junior-senior seminar; three English electives in literary studies or periods or language and writing.

Bachelor of Science

ENG 1126, Backgrounds to English and American Literature; ENG 1307, Approaches to Literature; ENG 1120, ENG 1121, Survey of American Literature I and II; two period courses; one figure course, one language and writing course; one junior-senior seminar; three English electives in literary studies or periods or language and writing.

Minor in Literature

Distribution requirements as required for the Bachelor of Arts program. *Six courses required.* Two survey courses required from the following: ENG 1120, Survey of English Literature I; ENG 1121, Survey of English Literature II; ENG 1123, Survey of American Literature I; ENG 1124, Survey of American Literature II. One course from each of the following categories: (a) periods; (b) major figures; and (c) language and writing. One elective from (a), (b), (c), or literary studies.

Minor in Writing

Six courses required. Two courses from: ENG 1350, Intermediate Writing; ENG 1351, Creative Writing; ENG 1125, Technical Writing I. Four courses from: ENG 1370, Technical Writing II; ENG 1371, Writing for the Computer Industry; ENG 1380, Writing for the Professions: Health Services; ENG 1352, Advanced Writing; ENG 1381, Writing for the Professions: Business Administration; ENG 1382, Writing for the Professions: Criminal Justice; ENG 1357, Poetry Workshop; ENG 1358, Fiction Workshop; ENG 1362, Publication Arts; ENG 1359, Nonfiction Workshop; ENG 1361, The Writing Process; ENG 1360, Topics in Writing: Reading and Writing Nonfiction.

Minor in Linguistics

See Interdisciplinary Minors.

Minor in Technical Communications

See Interdisciplinary Minors.

Geology

Bachelor of Arts

GEO 1212, Physical Geology; GEO 1213, Physical Geology Laboratory; GEO 1222, Historical Geology; GEO 1223, Historical Geology Laboratory; GEO 1310, Descriptive Mineralogy; GEO 1311, Optical Crystallography; GEO 1312, Petrography; GEO 1418, Structural Geology; six geology electives.

MTH 1106, MTH 1107, Fundamentals of Mathematics I and II; *or* MTH 1107, MTH 1108, Calculus I and II; PHY 1231, Physics for Science Majors; *or* PHY 1201, Physics for the Life Sciences I; CHM 1111, General Chemistry I; CHM 1122, General Chemistry II.

Bachelor of Science

GEO 1212, Physical Geology; GEO 1213, Physical Geology Laboratory; GEO 1222, Historical Geology; GEO 1223, Historical Geology Laboratory; GEO 1305, Rock Identification Laboratory; GEO 1310, Descriptive Mineralogy; GEO 1311, Optical Crystallography; GEO 1312, Petrography.

MTH 1107, MTH 1108, Calculus I and II, *or* MTH 1123, MTH 1124, MTH 1125, Calculus I, II, and III; PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III; CHM 1111, CHM 1122; *or* CHM 1151, CHM 1152, General Chemistry I and II; CHM 1231 *or* CHM 1221, Analytical Chemistry; *or* CHM 1391, Physical Chemistry; *or* GEO 1412, Geochemistry; two approved additional science electives; six courses in the humanities and/or social sciences; GEO 1418, Structural Geology; eight geology electives.

Minor In Geology

GEO 1212, Physical Geology; GEO 1222, Historical Geology, GEO 1310, Descriptive Mineralogy; plus two of the following one-credit laboratories; GEO 1213, Physical Geology Laboratory; GEO 1223, Historical Geology Laboratory; GEO 1305, Rock Identification Laboratory; plus four geology electives (GEO 1412 or higher number) chosen with the approval of the Earth Science Department.

History

Bachelor of Arts

HST 1101 and HST 1102, Western Civilization I and II; HST 1201 and HST 1202, United States to 1877 and United States since 1877; HST 1241, The Historian's Craft; HST 1805, Approaches to History; nine history electives distributed as follows: two courses in Group A (ancient, medieval, early modern Europe); two courses in Group B (modern Europe); two courses in Group C (America); two courses in Group D (other regions); one course in any of the above groups.

Recommended: Courses in the related social sciences.

Bachelor of Sciences

HST 1101 and HST 1102, Western Civilization I and II; HST 1201 and HST 1202, United States to 1877 and United States since 1877; HST 1241, The Historian's Craft; HST 1251, Social Science Methodology; HST 1805, Approaches to History; eleven history electives distributed as follows: two courses in Group A (ancient, medieval, and early modern Europe); two courses in Group B (modern Europe); two courses in Group C (America); two courses in Group D (other regions); three courses in any of the above groups.

Either a social science minor that requires some theoretical or methodological courses; *or* a social science minor without theoretical or methodological courses (in which case students must take either PSY 1211, SOC 1320, or ECN 1250 or another acceptable statistics course); *or* a coherent program in science and/or social science composed of six courses (in which case students should consult with their departmental adviser and have the approval of the Undergraduate Committee in the Department of History); *or* a recognized minor in another college of the University (e.g., Business Administration).

A computer course approved by the departmental adviser.

Human Services

Bachelor of Arts

Prerequisite Courses (six): SOC 1100, Introduction to Sociology; *or* ED 1100, Education and Social Science; ED 1302, The Human Services Professions; PSY 1111 and PSY 1112, Foundations of Psychology I and II; *or* ED 1102 and ED 1103, Human Development and Learning I and II; POL 1111, Introduction to American Government; ECN 1115 *or* ECN 1116, Principles and Problems of Economics; *or* equivalent.

Core Courses (nine): PSY 1211, Statistics in Behavioral Science I; *or* SOC 1320, Introduction to Statistical Analysis *or* ED 1307, Introduction to Educational Statistics; PSY 1511, Experimental Design in Psychology; *or* SOC 1321, Research Methods I, *or* SOC 1324, Human Services Research and Evaluation, *or* POL 1300, Conceptual Foundations of Contemporary Political Analysis; SOC 1240, Sociology of Human Services Organizations; PSY 1272, Personality I; PSY 1373, Abnormal Psychology I; ED 1300, Education and Psychosocial Development; SPC 1338, Group Discussion; *or* ED 1301, Educational Applications of Social Psychology; *or* ED 1317, Seminar in Group Process; CRS 1310, Intervention Strategies; INT 1333, Senior Seminar.

Specified Electives (any three courses): SOC 1245, Sociology of Poverty; SOC 1250, The Sociology of Private and Public Assistance; SOC 1535, Seminar in Social Welfare; POL 1308, The Politics of Poverty; ECN 1315, Income Inequalities and Discrimination; AFR 1240, Contemporary Issues in Black Society; AFR 1150, Black Cultural Development in the United States; AFR 1243, Minorities, Ethnicity, and Human Rights; ED 1310, Class and Ethnic Relations in Education; CRS 1200, Introduction to Special Education.

Specializations (five courses in any one specialization): Specializations are individually constructed by the student and his/her adviser. Alternatives are grouped in three broad clusters: Clinical, Community, and Administration. Fieldwork: INT 1330, Human Services Fieldwork I; INT 1331, Human Services Fieldwork II.

Specialization in Deaf Studies

Prerequisite Courses, Core Courses, and Fieldwork Courses follow the standard Human Services major.

Three Specified Electives selected from the list above, including the following alternatives: PSY 1271 or SOC 1135, Social Psychology; SOA 1135, Language and Culture; SOA 1101, Culture, Meaning, and Everyday Experience; ENG 1118, Introduction to Language; PSY 1263, Body Language; SOC 1140, Sociology of Prejudice; SPC 1232, Male and Female Communications; CRS 1313, Introduction to Counseling.

Deaf Studies Specialization: ASL 1101, American Sign Language I; ASL 1102, American Sign Language II; ASL 1201, Intermediate American Sign Language I; ASL 1202, Intermediate American Sign Language II; *and five courses selected from:* ASL 1211, Deaf Culture; ASL 1212, Deaf History; PSY 1363, American Sign Language Linguistics; PSY 1261, Bilingualism; SLA 1101, Introduction to Speech and Hearing; ASL 1401, American Sign Language Literature.

Interdisciplinary

Independent Major

An eligible student may petition the College Curriculum Committee to meet requirements for the B.A. degree in an Independent major. Eligibility, procedures, and requirements must be discussed in advance with an adviser in the Dean's Office. No student may be considered an Independent major until a curriculum proposal has been submitted to, and approved by, the Curriculum Committee.

Minor in Marine Studies

Revised requirements will be available in the Winter Quarter of 1985. Contact the Marine Science and Maritime Studies Center.

Minor in Media Studies

To qualify for a minor in Media Studies, the student must complete a minimum of eight courses as follows: three required courses: SPC 1250, Introduction to Mass Communication; HST 1575, History of Media in America; and SPC 1300, Introduction to Communication Theory *or* SPC 1317, Theories of Audience Behavior; *or* INT 1320, Exploring Humanities through Film; and five elective courses from the two categories Media Production and Media Application (at least two electives in each category). Individual student programs will be developed in consultation with faculty advisers. Interested students should contact Dr. Zaremba (Department of Speech Communication) for information on program development and elective choices.

Minor in Technical Communication

Eight courses are required. Students must choose courses from the following areas:

Writing Courses

ENG 1125 Technical Writing II (Required)

Choose two of the following:

- ENG 1370 Technical Writing II
- ENG 1371 Writing for the Computer Industry
- ENG 1380 Writing for the Professions: Health Services
- ENG 1352 Advanced Writing
- ENG 1381 Writing for the Professions: Business Administration
- ENG 1114 Freshman Technical Writing

One of these courses must be ENG 1370 or 1371.

Speech Communication Courses

Choose one:

- SPC 1116 Business and Professional Speaking
- SPC 1331 Interpersonal Communication II

Graphic Arts Courses

- JRN 1440 Design and Graphics

You may take an equivalent in another department or college.

Computer Programming

- COM 1101 Introduction to Computers I (Required)

Computer Science and Science Courses

Choose two courses. We strongly recommend a sequence of two in the same area.

- IIS 1125 COBOL Programming I
- GE 1106 FORTRAN Programming
- BIO 1130 General Biology
- BIO 1131 Animal Biology
- CHM 1111 General Chemistry
- CHM 1112 General Chemistry
- GEO 1212 Physical Geology
- GEO 1213 Historical Geology
- PHY 1231 Physics for Science Majors I
- PHY 1232 Physics for Science Majors II
- PHY 1233 Physics for Science Majors III

Minor in Urban Studies

Students must take 28 quarter hours (seven courses) as follows: *Required Courses (three)*: SOC 1147, Urban Society; POL 1324, Urban Politics; ECN 1320, Urban Economics. One course from each of the following four areas: *Urban Problems and Policies* (SOC 1346, Suburb and Metropolis; POL 1318, State and Local Government; ECN 1321, Urban Economic Problems and Policies), *Urban Humanities* (HST 1391, European Urban History to 1850; HST 1543, American Urban History; ENG 1608, The City in Literature), *Urban Form and Design* (ART 1113, Architecture and the City; ART 1225, Technology, Architecture, and the City; ART 1150, Introduction to Architectural Design), *African-American Studies* (AFR 1261, Economics of Urban Poverty; AFR 1275, Urban Political Issues; AFR 1475, Public Policy Analysis).

To obtain credit for the minor, students must file a petition form with the College of Arts and Sciences at the time of senior clearance. Petition forms may be obtained at the College office or from advisers for the program. Interested students should confer with an adviser as soon as possible. Advisers are: Professor Robert Gilbert, Political Science (303 ME, ext. 2796); Professor Ronald McAllister, Soc./Anthro (500 HO, ext. 2868); Professor Clay McShane, History (203 ME, ext. 2660); Professor Peter Serenyl, Art (401 UO, ext. 2346); Professor Gregory Wassell, Economics (317 LA, ext. 2196).

Minor in Women's Studies

Students take nine of the following courses, including four required interdisciplinary courses, and five electives.

Required Interdisciplinary Courses: INT 1150, Introduction to Women's Studies; SOC 1302, Feminist Perspectives on Society; INT 1850, Seminar in Research I; INT 1851, Seminar in Research II.

Elective Courses: SOA 1160, Sex, Sex Roles, and the Family; SOC 1102, Evolution and Society; SOC 1160, Sex and Gender Roles; SOC 1177, Social Roles in Business; SOC 1178, Women Working; SOC 3155*, The Family; SOC 3160*, Men, Women, and Social Change; HST 1472, Family in European History; HST 1392, Women in European History; HST 1473, Women in Modern Europe; HST 1554, The American Women; HST 1553, Family in American History; HST 3399*, Approaches to Women's History; AFR 1241, The Black Family; AFR 1480, Black Women/Black Men; BIO 1187, Biology of Human Reproduction; PHL 1295, Medicine, Religion, and the Healer's Art; DRA 1128, Women in Western Drama; DRA 1129, Sexuality in Drama; ENG 1551, Sex Roles in Literature; MUS 1106, Women in Music; POL 1327, Sex Roles in American Politics; POL 1328, Women in Public Management; POL 1316, Contemporary Revolutionary Politics; POL 3665*, Women in Public Management; POL 3667*, Equal Opportunity in Public Administration; POL 3668*, Legal Issues in Personnel Administration; CJ 1616, Women and Criminal Justice.

These courses represent the most current listing. New courses are continually being developed and added to the program. For more information about courses and the Women's Studies Program contact Professor Debra Kaufman (ext. 2686).

Journalism

Bachelor of Arts Bachelor of Science

Each major will complete the journalism core and one of four concentrations—Newspaper/Print, Radio-Television News, Advertising, or Public Relations—to correspond with his/her career objective.

Journalism Core: JRN 1501, History of Journalism; JRN 1512, Journalism, Ethics and Issues; JRN 1103, Newswriting I; JRN 1104, Newswriting II; JRN 1206, Editing; JRN 1508, Law of the Press; JRN 1301, Photojournalism.

Newspaper/Print Concentration: JRN 1305, Techniques of Journalism; JRN 1432, Local Government Reporting; JRN 1440, Design and Graphics; JRN 1575, Publication Production and Management; one journalism elective.

Radio-Television News Concentration: JRN 1320, Radio News Gathering and Writing; JRN 1421, Television Newswriting; JRN 1422, Television News Production; JRN 1894, Directed Study; one journalism elective.

Public Relations Concentration: JRN 1336, Public Relations Principles; JRN 1440, Design and Graphics; JRN 1460, Public Relations Problems; JRN 1561, Public Relations Practice; one journalism elective.

Advertising Concentration: JRN 1440, Design and Graphics; JRN 1350, Advertising Principles; JRN 1451, Advertising Copy Writing; JRN 1552, Advertising Practice; one journalism elective.

Each major will complete the following related requirements:

ENG 1275, Grammar for Journalists; ENG 1110, Freshman English I; ENG 1111, English II; ENG 1120, Survey of English Literature I; and two courses from this list: ENG 1121, Survey of English Literature II; ENG 1123, Survey of American Literature I; ENG 1124, Survey of American Literature II.

*A graduate course open to students in the Women's Studies program. (See appropriate catalog for prerequisites.) Students must petition in advance to take these courses and complete a special registration form (available at the Dean's Office).

POL 1111, Introduction to American Government; POL 1318, State and Local Government; HST 1201, United States to 1877; HST 1202, United States since 1877; ECN 1115, Principles of Economics; and one additional course in economics or business; SPC 1600, Introduction to Communication Research, or the equivalent; PHL 1200, Introduction to Logic I; PHL 1140, Social and Political Philosophy; HST 1101, Western Civilization I; HST 1102, Western Civilization II; COP 1135, Professional Development for Journalists.

Introduction to Art, Drama, and Music or one course from each of the following categories—(a): ART 1106, Introduction to Art and Architecture; ART 1115, Art and Society; ART 1101, History of Art II; ART 1220, American Sculpture and Painting; (b): MUS 1100, Music I; MUS 1120, Survey of Music History; MUS 1101, Music as a Listening Experience; DRA 1101, Theatre Appreciation.

Bachelor of Arts

In addition to the journalism and related requirements above, candidates for the Bachelor of Arts degree will complete four courses in science and/or math.

Bachelor of Science

In addition to the journalism and related requirements above, candidates for the Bachelor of Science degree will complete six courses in science and/or math.

Linguistics

Bachelor of Arts

Freshman Requirements: ENG 1110, Freshman English I; ENG 1111, English II; mathematics course; two courses from the humanities; two from the sciences; and two from the social sciences.

General Requirements: ENG 1118, Introduction to Linguistics; PSY 1262, Introduction to Language and Cognition; PSY 1361, Introduction to Phonetics and Phonology; SOA 1135, Language and Culture (or an advanced course in the same area); ENG 1401, Grammars of English; LNL 1235, Applied Linguistics; or LNG 1236, Advanced Applied Linguistics.

Language Proficiency: Two advanced courses in a spoken second language (see Bachelor of Sciences for proficiency in American Sign Language).

Additional Courses: Five courses from the following: PSY 1261, Bilingualism; PSY 1362, Child Language; PSY 1363, Linguistics of American Sign Language; PSY 1364, Cognition; PSY 1365, Neurolinguistics; PSY 1264, Animal Communication; PSY 1263, Body Language; PHL 1440, Philosophy of Language; PHY 1215, Symbolic Logic; ENG 1119, Foundations of the English Language; ENG 1402, Transformational Grammar; ENG 1407, Introduction to Semantics; ENG 1408, Topics in Linguistics; LNG 1236, Advanced Applied Linguistics.

Laboratory Course: PSY 1562, Laboratory in the Psychology of Language. *Seminars:* Two of the following: PSY 1661, Seminar in the Psychology of Language; ENG 1690, Seminar in Stylistics.

Practicum: One course: fieldwork, directed study, sign language teaching, or interpreting.

Bachelor of Science

Same requirement as the Bachelor of Arts, except that American Sign Language can count toward the second-language proficiency requirement.

Mathematics

Bachelor of Arts

MTH 1143, MTH 1144, MTH 1145, Calculus I, II, and III; MTH 1243, MTH 1244, Calculus and Linear Methods I and II; MTH 1245, MTH 1246, Differential Equations and Linear Methods I and II; MTH 1301, Linear Algebra; MTH 1311, Analysis I; four approved mathematics electives selected in consultation with an adviser.

Bachelor of Science

PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III.

MTH 1143, MTH 1144, MTH 1145, Calculus I, II, and III; MTH 1243, MTH 1244, Calculus and Linear Methods I and II; MTH 1301, Linear Algebra; MTH 1311, Analysis I; seven approved mathematics electives selected in consultation with an adviser.

PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III; two non-science courses.

Modern Languages

Bachelor of Arts

Eight advanced electives in the major language,* two advanced electives in the minor language.*

ENG 1120, ENG 1121, Survey of English Literature I and II; four history electives.

Bachelor of Science

Twelve advanced electives in the major language, including two conversation and composition courses; six advanced electives in the minor language,* including two conversation and composition courses; two history electives.

Minor in Modern Language

The Department of Modern Languages also offers a minor program for students whose major lies in other disciplines. The general requirement is *six* advanced courses (beyond the 1104 level) in the language. Interested students should consult with Professor Modee (ext. 2237) about specific course requirements.

Music

Bachelor of Arts

MUS 1201, MUS 1202, MUS 1203, MUS 1204, Theory I, II, III, and IV; MUS 1301, 1302, Masterworks Analysis I and II; MUS 1241, Piano I; MUS 1120, Survey of Music History; MUS 1121, Medieval and Renaissance Music; MUS 1122, Music of the Baroque Era; MUS 1123, Music of the Classical Era; MUS 1124, Music of the Romantic Era; MUS 1125, Music of the Twentieth Century; three approved music electives; eight quarter hours of ensemble credits (MUS 1230, 1231, 1232, and/or 1233).

HST 1102, Western Civilization II; INT 1100, Introduction to Art, Music, and Drama; ART 1106, Introduction to Art; or DRA 1101, Theatre appreciation; or DRA 1112, Drama Theory.

Minor in Music

MUS 1201, MUS 1202, MUS 1203, Theory I, II, and III; MUS 1241, Piano Class I; MUS 1120, Survey of Music History; one approved music elective; any *one* of the following courses: MUS 1121, Medieval and Renaissance Music; MUS 1122, Music of the Baroque Era; MUS 1123, Music of the Classical Era; MUS 1124, Music of the Romantic Era; MUS 1125, Music of the Twentieth Century.

*Courses beyond the intermediate level.

Philosophy

Bachelor of Arts

PHL 1225, Ancient Philosophy; PHL 1230, Modern Philosophy; PHL 1200, Introduction to Logic I; *or* PHL 1215, Symbolic Logic; PHL 1400, Theory of Knowledge; *or* PHL 1405, Metaphysics; *or* PHL 1335, Moral Philosophy; one philosophy seminar; eight philosophy electives.

Bachelor of Science

PHL 1225, Ancient Philosophy; PHL 1230, Modern Philosophy; PHL 1200, Introduction to Logic I; *or* PHL 1215, Symbolic Logic; PHL 1400, Theory of Knowledge; *or* PHL 1405, Metaphysics; *or* PHL 1335, Moral Philosophy; one philosophy seminar; eight philosophy electives.

Minor in Philosophy

To qualify for a minor in Philosophy, a student must take twenty-eight quarter hours in philosophy to be distributed as follows:

Introductory courses: PHL 1100, Introduction to Philosophy I; *or* PHL 1105, Introduction to Scientific Method; *History of Philosophy:* PHL 1225, Ancient Philosophy; *or* PHL 1230, Modern Philosophy. *Logic Requirement:* PHL 1200, Introduction to Logic I; *or* PHL 1215, Symbolic Logic. At least one of the following courses: PHL 1142, Philosophy of Mind; PHL 1400, Theory of Knowledge; PHL 1405, Metaphysics; PHL 1335, Moral Philosophy.

Electives: Three electives; three electives in Philosophy.

Physics

Bachelor of Arts

PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III, and their associated laboratories—PHY 1531, PHY 1532, PHY 1533; PHY 1301, Intermediate Mechanics; PHY 1302, Electric and Magnetic Fields; three upper-level physics lecture courses, three upper-level laboratory courses. MTH 1143, MTH 1144, MTH 1145, Calculus I, II, and III; MTH 1243, MTH 1244, Calculus and Linear Methods I and II; one advanced mathematics elective.

Bachelor of Science

PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III, and their associated laboratories—PHY 1531, PHY 1532, PHY 1533; PHY 1301, Intermediate Mechanics; PHY 1302, Electric and Magnetic Fields; PHY 1304, Mathematical Physics; PHY 1305, Thermodynamics and Kinetic Theory; PHY 1404, Wave Motion and Optics; PHY 1303, Modern Physics; PHY 1401, Classical Mechanics; PHY 1402, PHY 1403, Electricity and Magnetism I and II; three upper-level physics laboratory courses.

MTH 1143, MTH 1144, MTH 1145, Calculus I, II, and III; MTH 1243, MTH 1244, Calculus and Linear Methods I and II; MTH 1245, MTH 1246, Differential Equations and Linear Methods I and II; five additional electives from those approved for majors in the following fields: physics, mathematics, chemistry, engineering, biology, and geology.

Minor in Physics

PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II and III *or* PHY 1221, PHY 1222, PHY 1223, PHY 1224, Physics for Engineering students I, II, III, and IV; *and* three upper level lecture or laboratory courses from the following list: PHY 1301, PHY 1302, PHY 1411, PHY 1401, PHY 1304, PHY 1402, PHY 1403, PHY 1305, PHY 1404, PHY 1303, PHY 1415, PHY 1416, PHY 1551, PHY 1552 PHY 1555, PHY 1414, PHY 1413.

Instrumentation for Science Minor

PHY 1231, PHY 1232, PHY 1233, Physics for Science Majors I, II, and III; *or* PHY 1221, PHY 1222, PHY 1223, Physics for Engineering Students I, II, and II.

PHY 1555, Wave Laboratory; PHY 1551, PHY 1552, Electronics for Scientists I and II; PHY 1557, Advanced Laboratory.

Political Science

Bachelor of Arts

POL 1110, Introduction to Politics; POL 1111, Introduction to American Government; POL 1112, Introduction to International Relations; POL 1113, Introduction to Foreign Governments and Societies (formerly Introduction to Comparative Politics); POL 1261, Public Administration; one political theory/ thought course selected from the following: POL 1370, POL 1373, POL 1374; seven political science electives.

Six social science electives selected from at least three of the following areas: African-American studies, anthropology, economics, history, psychology, and sociology.

Bachelor of Science

POL 1110, Introduction to Politics; POL 1111, Introduction to American Government; POL 1112, Introduction to International Relations; POL 1113, Introduction to Foreign Governments and Societies (formerly Introduction to Comparative Politics); *POL 1301, Research Methods I; *POL 1302, Research Methods II; POL 1261, Public Administration; and one political theory/thought course selected from the following: POL 1370, POL 1373, POL 1374; six political science electives.

Six social science electives selected from at least three of the following areas: African-American studies, anthropology, economics, history, psychology, and sociology.

Minor in Political Science

Any two of the following courses: POL 1110, Introduction to Politics; POL 1111, Introduction to American Government; POL 1112, Introduction to International Relations; POL 1113, Introduction to Foreign Governments and Societies; POL 1261, Public Administration. Any five additional courses offered by the Department of Political Science for Political Science majors, including courses listed above that have not been selected to fulfill the above requirement.

Concentration in Public Administration

Bachelor of Science

POL 1110, Introduction to Politics; POL 1111, Introduction to American Government; POL 1301, Research Methods I; POL 1302, Research Methods II; POL 1260, Public Policy Analysis; POL 1261, Public Administration; POL 1266, Public Personnel Administration; POL 1267, Public Budgeting; POL 1262, Organization Theory; and one political theory/thought course selected from the following: POL 1370, POL 1373, POL 1374; four public administration electives.

Six social science electives selected from at least three of the following areas: African-American studies, anthropology, economics, history, psychology, and sociology.

Psychology

Bachelor of Arts

General Requirements: HST 1101, Western Civilization I, or HST 1102, Western Civilization II; PSY 1110, Perspectives in Psychology; and PSY 1112, Foundations of Psychology II; PSY 1211 and PSY 1212, Statistics in Behavioral Sciences I and II; PSY 1271, Social Psychology, or PCY 1272, Personality I; PSY 1381, Sensation; or PSY 1382, Perception; PSY 1262, Language and Cognition; PSY 1231, Learning and Motivation I; and PSY 1351, Physiological Bases of Psychology I.

Students choose either General Psychology or one of four areas of concentration: Language and Cognition; Learning and Behavior Analysis; Personality and Social Psychology; or Sensory and Neuropsychology. The additional courses required for each concentration follow:

General psychology: four psychology electives; three psychology laboratories; and one psychology seminar.

Language and Cognition: PSY 1261, Bilingualism; PSY 1361, Introduction to Phonetics; two psychology electives; PSY 1562, Laboratory in Psycholinguistics; PSY 1890, Directed Study in Language and Cognition; one additional psychology laboratory; and PSY 1662, Seminar in Cognition; or PSY 1661, Seminar in the Psychology of Language.

Learning and Behavior Analysis: PSY 1431, Behavior Change in Institutions; PSY 1331, Learning and Motivation II; PSY 1531, Learning and Motivation Laboratory; PSY 1532, Behavior Modification Laboratory; one additional psychology laboratory; and one seminar, either PSY 1332, Introduction to Programmed Learning; PSY 1631, Seminar in Behavior Theory, or PSY 1632, Seminar in Behavior Modification.

Personality and Social Psychology: PSY 1271, Social Psychology; or PSY 1272, Personality I (see note 1); PSY 1273, Personality II; SOC 1135, Social Psychology (see note 2); two additional courses selected from the following: SOA 1185, Aggression (see note 2); SOA 1160, Sex, Sex Roles, and Family (see note 2); SOC 1140, Sociology of Prejudice (see note 2); SPC 1315, Theories of Persuasion (see note 2). Also PSY 1571, Laboratory in Social Psychology, or PSY 1572, Laboratory in Personality; two additional psychology laboratories; and one seminar, either PSY 1671, Seminar in Social Psychology; PSY 1672, Seminar in Clinical Psychology and Personality, or SOC 1337, Seminar in Social Psychology (see note 2).

Sensory and Neuropsychology: PSY 1381, Sensation, or PSY 1382, Perception (see note 1); PSY 1352, Physiological Bases of Psychology II; PSY 1651, Seminar in Neuropsychology; PSY 1353, Comparative Psychology and Ethology; PSY 1581, Sensation and Perception Laboratory; PSY 1551, Laboratory in Neuropsychology; one additional psychology laboratory; and PSY 1653, Seminar in Sensory and Physiological Psychology.

Bachelor of Science

General Requirements. Freshman requirements (see note 1); HST 1101, Western Civilization I, or HST 1102, Western Civilization II; three additional courses in mathematics, physics, chemistry, or biology, including at least one from PHY 1201 and PHY 1501, Physics for the Life Sciences I and Laboratory; CHM 1111, General Chemistry, or BIO 1130, General Biology. Also, PSY 1110, Perspectives in Psychology; and PSY 1112, Foundations of Psychology II; PSY 1211 and PSY 1212, Statistics in Behavioral Sciences I and II; PSY 1271, Social Psychology, or PSY 1272, Personality I; PSY 1381, Sensation, or PSY 1382, Perception; PSY 1262, Language and Cognition; PSY 1231, Learning and Motivation I; and PSY 1351, Physiological Bases of Psychology.

Students choose either General Psychology or one of four areas of concentration: Language and Cognition; Learning and Behavior Analysis; Personality and Social Psychology; or Sensory and Neuropsychology. The additional courses required for each concentration follow:

General Psychology: six psychology electives; four psychology laboratories; one psychology seminar; and one Directed Study of Honors Research, from PSY 1890 to PSY 1899.

Language and Cognition: PSY 1261, Bilingualism; PSY 1361, Introduction to Phonetics; ENG 1118, Introduction to Linguistics (see note 2); three psychology electives; PSY 1562, Laboratory in Psycholinguistics; PSY 1890, Directed Study in Language and Cognition; two additional psychology laboratories; PSY 1662, Seminar in Cognition, or PSY 1661, Seminar in the Psychology of Language; and one Directed Study or Honors Research, from PSY 1890 to PSY 1899.

Learning and Behavior Analysis: PSY 1431, Behavior Change in Institutions; PSY 1331, Learning and Motivation II; two psychology electives; PSY 1531, Learning and Motivation Laboratory; PSY 1532, Behavior Modification Laboratory; two additional psychology laboratories; one seminar, either PSY 1332, Introduction to Programmed Learning; PSY 1631, Seminar in Behavior Theory, or PSY 1632, Seminar in Behavior Modification; and one Directed Study or Honors Research, from PSY 1890 to PSY 1899 (see note 3).

Personality and Social Psychology: PSY 1271, Social Psychology; or PSY 1272, Personality I (see note 1); PSY 1273, Personality II; PSY 1353, Comparative Psychology and Ethology; SOC 1135, Social Psychology (see note 2); two additional courses selected from the following: SOA 1185, Aggression (see note 2); SOA 1160, Sex, Sex Roles, and Family (see note 2); SOC 1140, Sociology of Prejudice (see note 2); SPC 1315, Theories of Persuasion (see note 2). Also, PSY 1571, Laboratory in Social Psychology; or PSY 1572, Laboratory in Personality; three additional laboratories; one seminar, either PSY 1671, Seminar in Social Psychology; PSY 1672, Seminar in Clinical Psychology and Personality, or SOC 1135, Seminar in Social Psychology (see note 2); and one Directed Study or Honors Research, from PSY 1890 to PSY 1899 (see note 3).

Sensory and Neuropsychology: PSY 1381, Sensation, or PSY 1382; PSY 1352, Physiological Bases of Psychology II; PSY 1651, Seminar in Neuropsychology; PSY 1353, Comparative Psychology and Ethology; two psychology electives; PSY 1581, Sensation and Perception Laboratory; PSY 1551, Laboratory in Neuropsychology; two additional psychology laboratories; PSY 1653, Seminar in Sensory and Physiological Psychology; and one Directed Study or Honors Research, from PSY 1890 to PSY 1899 (see note 3).

Minor in Psychology

General Requirements: PSY 1111, Foundations of Psychology I; PSY 1112, Foundations of Psychology II; PSY 1211, Statistics in Behavioral Science I; and PSY 1212, Statistics in Behavioral Science II.

Students choose either General Psychology or one of four areas of concentration: Language and Cognition; Learning and Behavior Analysis; Personality and Social Psychology; or Sensory and Neuropsychology.

The additional courses required for each concentration follow:

General Psychology: PSY 1271, Social Psychology I; or PSY 1272, Personality; PSY 1381, Sensation, or PSY 1382, Perception; PSY 1262, Language and Cognition; PSY 1231, Learning and Motivation I; PSY 1351, Physiological Bases of Psychology I; and one psychology laboratory.

Language and Cognition: PSY 1262, Language and Cognition; PSY 1261, Bilingualism; PSY 1361, Introduction to Phonetics; PSY 1362, Child Language; PSY 1364, Cognition; and PSY 1562, Laboratory in Psycholinguistics.

Learning and Behavior Analysis: PSY 1241, Human Behavioral Development I; PSY 1231, Learning and Motivation I; PSY 1381, Sensation; PSY 1431, Behavior Change in Institutions; and PSY 1531, Learning and Motivation Laboratory.

Personality and Social Psychology: PSY 1271, Social Psychology; PSY 1272, Personality I; PSY 1273, Personality II; PSY 1373, Abnormal Psychology I; PSY 1273, Personality II; PSY 1373, Abnormal Psychology I; PSY 1374, Abnormal Psychology II; and PSY 1571, Laboratory in Social Psychology; or PSY 1572, Laboratory in Personality.

Sensory and Neuropsychology: PSY 1381, Sensation; PSY 1382, Perception; PSY 1351, Physiological Bases of Psychology I; PSY 1352, Physiological Bases of Psychology II; or PSY 1651, Neuropsychology; PSY 1353, Comparative Psychology and Ethology; and PSY 1581, Sensation and Perception Laboratory, or PSY 1551, Laboratory in Neuropsychology.

Notes

1. Whichever of these two courses was *not* taken to fulfill the basic psychology course requirement.
2. Credit for this course will be counted toward the psychology major only if the entire concentration is completed. If students change concentrations or decide to enroll in the General Psychology program, this course will be considered a free elective.

3. Students should arrange, well in advance of registration, for Directed Study or Honors Research with a faculty member whose laboratory focuses on the concentration area. For assistance in selecting potential sponsors, consult your advisor early in the preceding quarter.

Sociology-Anthropology

Concentration in Sociology

Bachelor of Arts

Preparatory Requirements: SOC 1100, Introduction to Sociology; and SOA 1100, Introduction to Anthropology. *Core Requirements:* SOC 1320, Introduction to Statistical Analysis; SOC 1321, SOC 1322, Research Methods I and II; SOC 1300, Classical Social Thought; SOC 1301, Current Social Thought; SOC 1310, Class, Power, and Social Change (preferably in senior year). *Elective Requirements:* two intermediate courses (100 or 200 level); two advanced courses (300 or 400 level); one anthropology course beyond SOA 1100.

Six electives in the social sciences other than sociology-anthropology.

Bachelor of Science

Preparatory Requirements: SOC 1100, Introduction to Sociology and SOA 1100, Introduction to Anthropology. *Core Requirements:* SOC 1320, Introduction to Statistical Analysis; SOC 1321, SSOC 1322, Research Methods I and II; SOC 1300, Classical Social Thought; SOC 1301, Current Social Thought; SOC 1310, Class, Power, and Social Change (preferably in senior year). *Elective Requirements:* two intermediate course (100 or 200 level); two advance courses (300 or 400 level); one anthropology course beyond SOA 1100.

Six electives in the social sciences other than sociology-anthropology.

Approved six-course specialization.

Minor in Sociology

Requirements: SOC 1100, Introduction to Sociology; any two courses from among the following: SOC 1321, Research Methods I; SOC 1322, Research Methods II; SOC 1300, Classical Social Thought; SOC 1301, Current Social Thought; and any three-course specialization in sociology arranged between the student and adviser.

Concentration in Anthropology

Bachelor of Arts

Preparatory Requirements: SOA 1100, Introduction to Anthropology; and SOC 1100, Introduction to Sociology. *Core Requirements:* at least three of the following: SOA 1135, Language and Culture; SOA 1155, Individual and Culture; SOA 1301, Human Origins; SOA 1160, Sex, Sex Roles, and Family; SOA 1103, Culture in Transition; SOA 1425, Tribal Society and Cultures; SOA 1146, Peasant Society and Culture; SOA 1470, Myth and Religion. *Elective Requirements:* at least six additional anthropology courses; one sociology elective.

Six electives in the social sciences other than sociology-anthropology.

Bachelor of Science

Preparatory Requirements: SOA 1100, Introduction to Anthropology; and SOC 1100, Introduction to Sociology. *Core Requirements:* at least three of the following: SOA 1135, Language and Culture; SOA 1155, Individual and Culture; SOA 1301, Human Origins; SOA 1160, Sex, Sex Roles, and Family; SOA 1103, Culture in Transition; SOA 1425, Tribal Society and Cultures; SOA 1146, Peasant Society and Culture; SOA 1470, Myth and Religion. *Elective Requirements:* at least six additional anthropology courses; one sociology elective.

Six electives in the social sciences other than sociology-anthropology.

Approved five-course specialization.

Minor in Anthropology

Requirements: SOA 1100, Introduction to Social Anthropology; SOA 1135, Language and Culture; SOA 1155, Individual and Culture; SOA 1160, Sex, Sex Roles, and Family; and any two-course specialization in anthropology arranged between the student and adviser.

Speech Communication**Concentration in Group and Public Communication****Bachelor of Arts**

Required Courses: SPC 1115, Introduction to Communication Skills; SPC 1300, Introduction to Communication Theory; SPC 1239, Argumentation and Debate, *or* SPC 1338, Group Discussion; SPC 1330, Interpersonal Communication I; SPC 1315, Theories of Persuasion, *or* SPC 1410, Contemporary Public Address; eight speech communication electives; POL 1110, Introduction to Politics, *or* POL 1111, Introduction to American Government; PSY 1112, Foundations of Psychology II, *or* SOC 1100, Introduction to Sociology; PSY 1271, Social Psychology, *or* SOC 1135, Social Psychology.

Bachelor of Science

Required Courses: SPC 1115, Introduction to Communication Skills; SPC 1300, Introduction to Communication Theory; SPC 1330, Interpersonal Communication I; SPC 1338, Group Discussion; SPC 1315, Theories of Persuasion; SPC 1415, Persuasive Techniques; SPC 1600, Introduction to Communication Research; six speech communication electives to be chosen from the following: SPC 1239, Argumentation and Debate; SPC 1116, Business and Professional Speaking; SPC 1250, The Mass and the Media; SPC 1410, Contemporary Public Address; SPC 1317, Theories of Audience Behavior; SPC 1437, Consultation Skills; SPC 1331, Interpersonal Communication II; SPC 1232, Female/Male Communication; ENG 1118, Introduction to Linguistics; ENG 1407, Introduction to Semantics; PHL 1200, Introduction to Logic I. Also, eight social science credits beyond the introductory level, selected in consultation with the student's adviser and based upon their value to the student's post-graduate activities.

College of Arts and Sciences distribution requirements; no language requirement.

Concentration in Personal Performance**Bachelor of Art**

Required Courses: SPC 1115, Introduction to Communication Skills; SPC 1110, Voice and Articulation; SPC 1111, Oral Interpretation; SPC 1116, Business and Professional Speaking; SPC 1239, Argumentation and Debate; SPC 1210, Advanced Vocal Techniques *or* SPC 1211, Advanced Oral Interpretation; SPC 1890, Directed Study; six speech communication electives.

College of Arts and Sciences distribution and foreign language requirements.

Bachelor of Science

Required Courses: SPC 1115, Introduction to Communication Skills; SPC 1300, Introduction to Communication Theory; SPC 1110, Voice and Articulation; SPC 1111, Oral Interpretation; SPC 1890, Directed Study; eight speech communication electives selected from the following: SPC 1239, Argumentation and Debate; SPC 1116, Business and Professional Speaking; SPC 1210, Advanced Vocal Techniques; SPC 1211, Advanced Oral Interpretation; SPC 1315, Theories of Persuasion; SPC 1415, Persuasive Techniques; SPC 1338, Group Discussion; SPC 1318, Communication in Education; SPC 1250, The Mass and the Media; SPC 1410, Contemporary Public Address; SPC 1317, Theories of Audience Behavior; SPC 1437, Consultation Skills; SPC 1330, Interpersonal Communication I; SPC 1331, Interpersonal Communication II; SPC 1232,

Female/Male Communication; SPC 1600, Introduction to Communication Research; ENG 1118, Introduction to Linguistics; ENG 1407, Introduction to Semantics; PHL 1200, Introduction to Logic I. In addition, the student must complete not less than four courses taught outside the Department, selected in consultation with his/her adviser on the basis of their value to the student's proposed post-graduate activities and approved by Speech Communication Curriculum Committee.

College of Arts and Sciences distribution requirements; no language requirement.

Minor in Theatre

All students minoring in Theatre are required to complete the following courses (for thirty-two quarter hours):

DRA 1150, Introduction to Acting; DRA 1200, Stagecraft; DRA 1212, Introduction to Theatrical Design; DRA 1106, DRA 1107, DRA 1108, Theatre History I, II, and III; DRA 1180, Concepts of Direction; and INT 1100, Introduction to Art, Drama, and Music.

Laboratory practice in technical theatre, scene building, and painting as well as performing backstage functions, are required parts of the Minor, in conjunction with the course requirements.

Theatre and Dance

Bachelor of Arts

Theatre majors have the opportunity of selecting one of seven concentrations: acting, scenic design, lighting design; costume design; literature/criticism; dance; and a generalist specialization. However, all majors in all concentrations, except dance, must also complete forty-eight quarter hours of the departmental core which consists of the following courses: DRA 1150, Introduction to Acting; DRA 1180, Concepts of Direction; DRA 1200, Stagecraft, DRA 1800, DRA 1801, DRA 1802, DRA 1803, Practicum in Play Production; DRA 1212, Introduction to Theatre Design; INT 1100, Introduction to Art, Drama, and Music; DRA 1112, Dramatic Theory/ Criticism; DRA 1106, DRA 1107, DRA 1108, Theatre History I, II, and III; Eng 1658, Introduction to Shakespeare; and ENG 1279, The Modern Novel.

Theatre majors with a dance concentration must also complete twenty-eight quarter hours of the departmental core, consisting of DRA 1150, Introduction to Acting; DRA 1180, Concepts of Direction; DRA 1200, Stagecraft; DRA 1800, DRA 1801, DRA 1802, DRA 1803, Practicum in Play Production; DRA 1212, Introduction to Theatrical Design; INT 1100, Introduction to Art, Drama, and Music; and DRA 1112, Dramatic Theory/Criticism. In addition, nineteen quarter hours of the following courses must also be completed as part of the core for a dance concentration: HSL 1621, Dance in Cultural Perspective; HSL 1632, Dance in the Twentieth Century; HSL 1261, Anatomy/Physiology I; HSL 1262, Kinesiology I; and HSL 1630, Aspects of Dance. These courses are offered in the Boston-Bouvé College of Human Development Professions.

The student majoring in theatre, after completing his/ her freshman year, can select one of seven concentrations—acting, scenic design, lighting design, costume design, literature/criticism, dance, and a generalist specialization—and enrolls in the courses required for the particular concentration selected:

Acting: DRA 1280, Stage Makeup; DRA 1300, Acting II, DRA 1301, Acting III; DRA 1370, Rehearsal and Performance; SPC 1110, Voice and Articulation. Eight quarter hours in Physical Education from the following: Modern Dance, Ballet, Jazz Dance, Gymnastics, Fencing and Physical Conditioning. Also, eight quarter hours of dramatic literature elective courses offered by the department and two workshops in voice and movement training.

Scenic Design: DRA 1210, Scene Design I; DRA 1213, Scene Design II; DRA 1214, Scene Design III; DRA 1226, Lighting Design I; DRA 1225, Scene Painting; DRA 1261, Costuming I; DRA 1209, Theatrical Drafting; DRA 1420, Advance Drafting and Construction; DRA 1410, Technical Production; and ART 1101, Art History Since 1400.

Lighting Design: DRA 1280, Stage Makeup; DRA 1210, Scene Design I; DRA 1226, Lighting Design I; DRA 1430, Lighting Design II; DRA 1225, Scene Painting; DRA 1261, Costuming I; DRA 1209, Theatrical Drafting; DRA 1420, Advanced Drafting and Construction; DRA 1246, Sound for the Theatre; DRA 1410, Technical Production; and ART 1101, Art History Since 1400.

Costume Design: DRA 1280, Stage Makeup; DRA 1210, Scene Design I; DRA 1226, Lighting Design I; DRA 1261, Costuming I; DRA 1400, Costuming II; DRA 1265, Pattern Drafting and Costume Construction; DRA 1209, Theatrical Drafting; DRA 1410, Technical Production; ART 1124, Creative Drawing; ART 1101, Art History Since 1400; and ART 1254, Intermediate Drawing.

Literature/Criticism: DRA 1122, Twentieth Century European Theatre; DRA 1140, Playwriting I; PHL 1340, Aesthetics; ART 1100, Art History to 1400; ART 1101, Art History Since 1400; MUS 1120, Survey of Music History; plus eight quarter hours in Special Topics in drama criticism offered by the department and eight quarter hours of dramatic literature elective courses offered by the department.

Generalist: Completion of departmental core courses plus the completion of forty quarter hours of departmental electives.

Dance: In addition to those courses required of students in the Dance Concentration which are offered by the College of Arts and Sciences, the following courses offered by Boston-Bouvé College of Human Development Professions must be completed: HSL 1314, Movement Fundamentals; HSL 1153, Modern Dance I; HSL 1154, Modern Dance II; HSL 1155, Modern Dance III; HSL 1321, Modern Dance IV; HSL 1156, Ballet I; HSL 1157, Ballet II; HSL 1158, Ballet III; HSL 1322, Ballet IV; HSL 1159, Jazz Dance I; HSL 1160, Jazz Dance II; HSL 1161, Jazz Dance III; HSL 1324, Jazz Dance IV; HSL 1165, Dance Improvisation; HSL 1252, Dance Composition I; Dance Composition II; HSL 1325, HSL 1326, HSL 1327, Dance Rehearsal and Performance I, II, and III; HSL 1162, Rhythmic Analysis; HSL 1864, HSL 1865, HSL 1866, Special Problems: Dance I, II, and III; HSL 1634, Laban Movement Analysis.

The following courses are recommended to be taken by all students in their freshman year: DRA 1150, Introduction to Acting; DRA 1200, Stagecraft; DRA 1212, Introduction to Theatrical Design; and INT 1100, Introduction to Art, Drama, and Music.

Also required for all Theatre majors in the Bachelor of Arts Program are the foreign language and core/ distribution requirements within the College of Arts and Sciences.

Bachelor of Science

Requirements for the Bachelor of Science in Theatre are the same as requirements for the Bachelor of Arts in Theatre with the following exceptions: students are not required to complete the foreign language nor the core/ distribution requirements of the College of Arts and Sciences.

Boston-Bouv  College of Human Development Professions

Specimen Program in Health Education

First Year

Quarter 1

No.	Course	Cl.	L.	Q.H.
CHM 1101	Gen. Chem.	3	3	4
ENG 1110	Fresh. Eng. I	4		4
ED 1100	Ed. & Soc. Sci.	4		4
HSL 1281	Current Iss. Hlth.	4		4
HSL 1254	First Aid PE Elective	2	1	2
				1

Quarter 2

No.	Course	Cl.	L.	Q.H.
CHM 1102	Gen. Chem.	3	3	4
BIO 1140	Bas. Ani. Bio. I	3	3	4
HSL 1280	Fnd. Hlth. Ed.	2		2
HSL 1284	Instnct. Res.	2		2
HSL 1283	Intro. Safety Ed. Soc. Elective	2		2
				4

Quarter 3

No.	Course	Cl.	L.	Q.H.
MTH 1106	Fund. Math.	4		4
BIO 1141	Bas. Ani. Bio. II	3	4	4
ENG 1111	Fresh. Eng. II	4		4
HSL 1285	Hlth. Problems PE Elective	4		4
				2

Second Year

Quarter 4

No.	Course	Cl.	L.	Q.H.
PSY 1111	Psych. I	4		4
ED 1102	Hum. Devel. I	4		4
HSL 1261	Anat.-Phys. Gen. Stud. Elective	3	2	4
		4		4

Quarter 5

No.	Course	Cl.	L.	Q.H.
PSY 1112	Psych. II	4		4
ED 1103	Human Devel. II	4		4
HSL 1610	Anat.-Phys.	3	2	4
HSL 1286	Nutrition	4		4

Third Year

Quarter 6

No.	Course	Cl.	L.	Q.H.
BIO 1121	Microbio.	3	4	4
ED 1104	Analysis of Tch. Pre-Practicum I.	4		4
HSL 1500	Mental Hlth. Require. Elect.	4		4
		4		4

Quarter 7

No.	Course	Cl.	L.	Q.H.
ED 1306	Meas. & Eval.	4		4
HSL 1516	Drug Use/Abuse	4		4
HSL 1502	Comm./Degen. Diseases Gen. Stud. Elective	4		4
		4		4

Fourth Year

Quarter 8

No.	Course	Cl.	Q.H.
CRS 1200	Intro. Spec. Ed.	4	4
HSL 1585	Teach. Proced.	4	4
HSL 1503	Hum. Sexuality Gen. Stud. Elective	4	4
		4	4

Quarter 9

No.	Course	Cl.	Q.H.
HSL 1504	Logvty. & Aging	4	4
HSL 1506	Comm. Hlth.	4	4
HSL 1507	Seminar Gen. Stud. Elective Fnd. Ed. Elect.	2	2
		8	8
		4	4

Fifth Year

Quarter 10

No.	Course	Cl.	Q.H.
HSL 1520	Student Teach. or	12	
HSL 1521	Field Exp.	12	

Quarter 11

No.	Course	Cl.	Q.H.
HSL 1503	Org./Admin. Hlth. Ed.	4	4
HSL 1510	Health Counseling	4	4
HSL 1508	Seminar Fnd. Ed. Elective	2	2
		4	4

Specimen Program in Human Services

Quarter 1 POL 1111, Introduction to American Government; ENG 1110, Freshman English I; ED 1100, Education and Social Science; designated elective.

Quarter 2 ENG 1111, Freshman English II; ED 1302, The Human Services Professions; ED 1317, Seminar in Group Process; designated elective.

Quarter 3 ECN 1116, Principles and Problems of Economics; designated electives.

Bachelor of Science *Required Courses:* ENG 1110, Freshman English I; ENG 1111, Freshman English II; ED 1102, Human Development I; ED 1103, Human Development and Learning II; ED 1100, Education and Social Science; POL 1111, Introduction to American Government; ECN 1116, Principles and Problems of Economics; ED 1302, The Human Services Professions; ED 1307, Introduction to Educational Statistics.

Core Courses: Either PSY 1272, Personality I, PSY 1273, Personality II, and PSY 1373, Abnormal Psychology, *or* PSY 1272, Personality I, PSY 1373, Abnormal Psychology I, and PSY 1374, Abnormal Psychology II; ED 1300, Psychosocial Development; ED 1317, Seminar in Group Process; ED 1301, Educational Applications of Social Psychology; SOC 1240, Sociology of Human Service Organizations; CRS 1306, Introduction to Rehabilitation; CRS 3434, Principles of Medical Rehabilitation; one of the following: SOC 1147, Urban Society, *or* SOC 1347, Community Analysis, *or* CRS 3437, Community Planning in Rehabilitation; one of the following: CRS 3439, Social Welfare and Rehabilitation, *or* SOC 1250, Sociology of Private and Public Assistance, *or* SOC 1535, Seminar in Social Welfare; CRS 3503, Counseling Theory and Process.

Approved four-course concentration; two supervised field placements.

Courses in the areas of drama/speech and education humanities.

Distribution requirements.

Specimen Program in Physical Education

First Year

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
BIO 1140	Bio. I	4	HSL 1256	Life/Career Plan.*	3	MTH 1106	Math.	4
ENG 1110	Fresh. Eng. I	4	BIO 1141	Bio. II or		HSL 1254	First Aid*	2
ED 1100	Soc. Sci.	4	CHM 1111	Chem. or		HSL 1281	Hlth. Issues	4
HSL 1255	Hum. Movt.*	3	PHY 1201	Physics	4	HSL 1253	Grp. Dynamics*	3
HSL 1109	Gymnastics I	1	ENG 1111	Fresh. Eng. II	4	HSL 1257	Hist./Phil. PE*	3
HSL 1142	Volleyball	1	ED 1102	Hum. Dev. I	4	HSL 1173	Track & Field	1
			HSL 1122	Gymnastics II	1	HSL 1101	Swimming	3
			HSL 1140	Basketball	1			

Second Year

Quarter 4			Quarter 5		
No.	Course	Q.H.	No.	Course	Q.H.
HSL 1261	Anat.-Physiology I*	4	HSL 1262	Kinesiology I*	4
HSL 1260	Motor Dev.	4	ED 1103	Hum. Devel. II	4
HSL 1258	Elem. School Act. or		HSL 1116	Tennis	1
HSL 1259	Sec. School Act.	3		Skill Elective	1
HSL 1162	Rhythmic Analysis	1		Elective	4
HSL	Skill Elective or			Elective	4
HSL 1151	Movement Ed.	1			
	Elective	4			

Third Year

Quarter 6			Quarter 7		
No.	Course	Q.H.	No.	Course	Q.H.
HSL 1611	Kinesiology II	4	HSL 1610	Anat.-Physiology II*	4
ED 1307	Ed. Stat.	4	HSL 1606	Motor Learn.*	4
PSY 1381	Psych. Elective		HSL 1607	Meas. and Eval.	4
PSY 1111			HSL 1603	Theory of Play or	
PSY 1364			HSL 1602	Theory of Coaching	2
		4		TAC	2
HSL 1615	Critical Teaching	4	HSL 1133	Condition or	
	TAC	2	HSL	Skill Elective	1
HSL 1114	Badminton	1	HSL	Skill Elective	1

Fourth Year

Quarter 8			Quarter 9		
No.	Course	Q.H.	No.	Course	Q.H.
HSL 1612	Exer. Physiology I*	4	HSL 1616	Curriculum Devel.	3
HSL 1264	Adapted PE I	4	HSL 1605	Bas. Athletic Trng.	3
HSL	TAC	2		Elective	4
HSL	TAC	2		Elective	4
HSL	Skill Elective	1		Elective	2
	Elective	4			

Note: For an area of concentration or option within the Physical Education Dept., other courses will be required as replacements for some courses listed above.

*Required Physical Education regardless of concentration.

Fifth Year**Quarter 10****Quarter 11**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1623	Student Teaching	12	HSL 1617	Admin.	4
				Elective	4
				Elective	4
				Elective	4

180 Q.H. = Minimum graduation requirement for Physical Education

185 Q.H. = Minimum graduation requirement for Athletic Training

Minimum of 24 Q.H. General Studies electives

Minimum of 9 Q.H. Boston-Bouv  College of Human Development Professions electives

Specimen Program in Sport Communication (Nonteaching)**First Year****Quarter 1****Quarter 2****Quarter 3**

No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
BIO 1140	Bio. I	4	HSL 1256	Life/Career Plan.	3	MTH 1106	Math.	4
ENG 1110	Fresh. Eng. I	4	BIO 1141	Bio. II or		HSL 1254	First Aid	2
ED 1100	Soc. Sci.	4	CHM 1111	Chem. or		HSL 1281	Current Iss. Hlth.	4
HSL 1255	Hum. Movt.	3	PHY 1201	Physics	4	HSL 1253	Grp. Dynamics	3
HSL 1109	Gymnastics I	1	ENG 1111	Fresh. Eng. II	4	HSL 1257	Hist./Phil. PE	3
HSL 1142	Volleyball	1	ED 1102	Hum. Dev. I	4	HSL 1173	Track & Field	1
			HSL 1140	Basketball	1	HSL 1101	Swimming	1
			HSL 1122	Gymnastics II	1			

Second Year**Quarter 4****Quarter 5**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1261	Anat.-Physiology I	4	HSL 1262	Kinesiology I	4
HSL 1260	Motor Dev.	4	ED 1103	Hum. Devel. II	4
JRN 1103	Newswrit. I	4	JRN 1104	Newswrit. II	4
SPC 1315	Theories Persuasion	4	HSL	Ind. or Dual Skill	
HSL	Team Skill Elective	1		Elective	1
				Elective	4

Third Year**Quarter 6****Quarter 7**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1611	Kinesiology II	4	HSL 1610	Anat.-Physiology II	4
ED 1307	Ed. Stat.	4	HSL 1606	Motor Learn.	4
PSY 1381	150, 156, 157, or 165 or 164 Psych. Electives	4	JRN 1206	Tech. Journalism Elective	4
JRN 1305	Tech. Journalism	4			

Fourth Year**Quarter 8****Quarter 9**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1612	Exer. Physiology	4	HSL 1605	Basic Athletic Trng.	3
HSL 1264	Adapted PE I	4	HSL 1603	Theory of Play	2
HSL	Coach/Officiate Elective	2	HSL 1602	Theory of Coaching	2
	Elective	4		Comm. Elective	4
	Elective	4		Electives	6

Fifth Year**Quarter 10****Quarter 11**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1622	Practicum	12	HSL 1617	Admin. of PE	4
			HSL 1600	Psych. of Sport	2
			HSL 1254	Soc. of Sport	2
				Elective	4
				Elective	4

180 Q.H. = Minimum graduation requirement for Physical Education Sport Communication

20 Q.H. = General Studies electives

9 Q.H. = Boston-Bouvé College of Human Development Professions electives

Note: Preregistration is essential for courses outside of the Physical Education Department.

Specimen Program in Recreation and Leisure Studies**First Year****Quarter 1****Quarter 2**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
SPC 1106	Fund. of Speech	3	3	ENG 1111	Fresh. Eng. II	4	4
ENG 1110	Fresh. Eng. I	4	4	BIO 1140	Ani. Bio. I	4(3)	4
ED 1100	Ed. Soc. Sci.	4	4	ED ____	Soc. Sci. Elec.	4	4
HSL 1223	Life/Career Plan.	4	4	HSL 1220	Found. Lead.		
HSL 1222	Camp Leadership		2		Leis. Serv.	4	4

Quarter 3

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
HSL 1281	Issues in Health	4	4				
BIO 1141	Ani. Bio. II	4(3)	4				
ED ____	Soc. Sci. Elec.	4	4				
REC ____	Prof. Skill Cluster	4	4				

Second Year**Quarter 4****Quarter 5**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
ED 1102	Hum. Devel. I	4		4	ED 1103	Hum. Devel. II	4		4
HSL 1261	Anat. Physio. I	3	2	4	HSL 1610	Anat. Physio. II	3	2	4
GEO ____	Earth Sci. Elec.			4	GEO ____	Earth Sci. Elec.			4
HSL 1221	Intro. to Rec. Leis.			3	3	REC ____	Prof. Skill Cluster		4

Third Year**Quarter 6****Quarter 7**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
HSL 1408	Intro. to Research	4	4	HSL 1409	Research Seminar	4	4
REC ____	Area of Concentration Course	4	4	HSL 1401	Prog. Planning	4	4
REC ____	Dept. Elective	4	4		Area of Concentration Course	4	4
	Guided Elective	3	4	REC ____	Guided Elective		4

Fourth Year**Quarter 8****Quarter 9**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
HSL 1400	Grp. Dynamics	3	3	HSL 1407	Intern. Rec.		
HSL 1406	Intern. Seminar	1	1		Leis. Serv.	16	
REC	Area of Concen. Course	4	4				
REC	Area of Concen. Course	4	4				

Fifth Year**Quarter 10****Quarter 11**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
REC	Area of Concen. Course	4	4	HSL 1410	Sr. Seminar in Cont. Issues	4	4
REC	Dept. Elective	3	4	REC	Area of Concen. Course	4	4
	Guided Elective		4		Guided Elective		4
	Guided Elective		4		Guided Elective		4

Specimen Program in Physical Education/Cardiovascular Health and Exercise Specialist (Nonteaching Certification)

First Year**Quarter 1****Quarter 2****Quarter 3**

No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
BIO 1140	Bio. I	4	HSL 1256	Life/Career Plan.	3	MTH 1106	Math.	4
ENG 1110	Fresh. Eng. I	4	BIO 1141	Bio. II	4	HSL 1254	First Aid	2
ED 1100	Soc. Sci.	4	ENG 1111	Fresh. Eng. II	4	HSL 1281	Current Iss. Hlth.	4
HSL 1255	Hum. Movt.	3	ED 1102	Hum. Dev. I	4	HSL 1253	Grp. Dynamics	3
HSL 1109	Gymnastics I	1	HSL 1122	Gymnastics II	1	HSL 1157	Hist./Phil. PE	3
HSL 1142	Volleyball	1	HSL 1140	Basketball	1	HSL 1173	Track & Field	1
						HSL 1101	Swimming	1

Second Year**Quarter 4****Quarter 5**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1261	Anat.-Physiology I	4	HSL 1262	Kinesiology I	4
HSL 1260	Motor Dev.	4	ED 1103	Hum. Devel. II	4
HSL 1605	Bas. Athletic Trng.	3	PSY 1111	Found Psych.	4
CHM 1111	Chem. I	4	CHM 1112	Chem. II	4
HSL 1162	Rhythmics	1	HSL 1116	Tennis	1
	Skill Elective	1		Skill Elective	1

Third Year**Quarter 6****Quarter 7**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1611	Kinesiology II	4	HSL 1610	Anat.-Physiology II	4
ED 1307	Ed. Stat.	4	HSL 1606	Motor Learn.	4
HSL 1515	Pub. Hlth.	4	HSL 1607	Meas. & Eval.	4
HSL 1608	Clin. Athletic Trng.	2	HSL 1133	Phys. Condition	1
HSL 1114	Badminton	1		Skill Elective	1
				Elective	4

Fourth Year**Quarter 8**

No.	Course	Q.H.
HSL 1612	Exer. Physiology	4
HSL 1421	Admin. Rec. and Parks	4
HSL 1426	Budg. Syst.	4
HSL 1609	Adv. Athletic Trng.	4
HSL 1132	Weight Trng.	1
	Skill Elective	1

Quarter 9

No.	Course	Q.H.
HSL 1613	Exer. Testing/ Presc.	3
HSL 3607	Electrocardiography	2
HSL 1286	Nutrition	4
	Elective	4
	Skill Electives	2

Fifth Year**Quarter 10**

No.	Course	Q.H.
HSL 1622	Super. Field Experience	12

Quarter 11

No.	Course	Q.H.
HSL 1866	Spec. Prog.	4
HSL 1502	Comm. and Degen. Diseases	4
HSL 1510	Health Couns.	4
	Elective	4

Specimen Program In Physical Education/Athletic Training Emphasis**First Year****Quarter 1**

No.	Course	Q.H.
BIO 1140	Bio. I	4
ENG 1110	Fresh. Eng. I	4
ED 1100	Soc. Sci.	4
HSL 1255	Hum. Movt.	3
HSL 1109	Gymnastics I	1
HSL 1142	Volleyball	1

Quarter 2

No.	Course	Q.H.
BIO 1141	Bio. II or	
CHM 1111	Chem. or	
PHY 1201	Physics	4
ENG 1111	Fresh. Eng. II	4
HSL 1256	Life/Career Plan.	3
ED 1102	Hum. Dev. I	4
HSL 1122	Gymnastics II	1
HSL 1140	Basketball	1

Quarter 3

No.	Course	Q.H.
MTH 1106	Math.	4
HSL 1254	First Aid	2
HSL 1281	Current Is. Hlth.	4
HSL 1257	Hist./Phil. PE	3
HSL 1253	Grp. Dynamics	3
HSL 1173	Track & Field	1
HSL 1101	Swimming	1

Second Year (Co-op starts)**Quarter 4**

No.	Course	Q.H.
HSL 1261	Anat.-Physiology I	4
HSL 1260	Motor Dev.	4
HSL 1605	Bas. Athletic Trng.	3
HSL 1162	Rhythmics	1
HSL 1258	Elem. School Act. or	
HSL 1259	Sec. School Act. Elective (Chem./ Physics/Bio. II)	3 4

Quarter 5

No.	Course	Q.H.
HSL 1262	Kinesiology I	4
ED 1103	Hum. Devel. II	4
HSL 1260	Motor Devel.	4
HSL 1116	Tennis	1
	Skill Elective	1
	Elective	4

Third Year**Quarter 6**

No.	Course	Q.H.
HSL 1611	Kinesiology II	4
ED 1307	Ed. Stat.	4
HSL 1615	Critical Teaching	3
HSL 1608	Clin. Athletic Trng.	2
HSL 1114	Badminton	1
	Elective	4

Quarter 7

No.	Course	Q.H.
HSL 1610	Anat.-Physiology II	4
HSL 1606	Motor Learn.	4
HSL 1607	Meas. & Eval.	4
HSL 1603	Theory of Play or	
HSL 1602	Theory of Coaching	2
	TAC	2
HSL 1133	Phys. Condition	1
	Skill Elective	1

Fourth Year**Quarter 8****Quarter 9**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1612	Exer. Physiology	4	HSL 1616	Curriculum Devel.	3
HSL 1264	Adapted PE I	4	HSL 1286	Nutrition	4
HSL 1609	Adv. Athletic Trng.	4		Elective	4
	Elective	4		TAC	2
	TAC	2		Elective	4

Fifth Year**Quarter 10****Quarter 11**

No.	Course	Q.H.	No.	Course	Q.H.
HSL 1623	Super. Student Teaching		HSL 1617	Admin. of PE	4
	Athletic Trng./ Experience	12		Elective	4
				Elective	4
				Elective	4

180 Q.H. = Minimum graduation requirement for Physical Education

185 Q.H. = Minimum graduation requirement for Athletic Training

20 Q.H. = General Studies electives

10 Q.H. = Boston-Bouvé College of Human Development Professions electives

Specimen Program in Physical Therapy**First Year****Quarter 1****Quarter 2****Quarter 3**

No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
PSY 1111	Fnd. of Psych. I	4	MTH 1107	Fund. Math.	4	CHM 1112	Gen. Chem.	5
MTH 1106	Fund. Math.	4	CHM 1111	Gen. Chem.	5	BIO 1141	Bas. Ani. Bio.	4
BIO 1140	Bas. Ani. Bio.	4	ENG 1110	Fresh. Eng. I	4	ENG 1111	Fresh. Eng. II	4
HSL 1281	Curr. Iss. in Hlth.	4						

Quarter 1, 2, or 3

No.	Course	Q.H.
HSL 1254	First Aid	2
PTH 1114	Intro. to Phys. Thrpy. I	2

Second Year**Quarter 4****Quarter 5**

No.	Course	Q.H.	No.	Course	Q.H.
PHY 1201	Bas. Physics	4	PHY 1202	Bas. Physics II	4
PHY 1501	Physics Lab I	1	BIO 1294	Hum. Physiology II	4
BIO 1253	Hum. Physiology I	4	BIO 1295	Hum. Anat.	4
HSL 1260	Percep. Motor Devel.	3	PSY 1112	Fnd. Psych. II	4
PTH 1114	Intro. to Phys. Thrpy. I	2	PTH 1115	Intro. to Phys. Thrpy. II	2
	Elective	4			

Third Year**Quarter 6**

No.	Course	Q.H.
PTH 1310	Clin. Gross Anat.	6
PTH 1315	Physiol. for Phys. Thrpsts.	3
PTH 1320	Phys. Thrpy I	2
PTH 1325	Clin. Medicine I	4

Quarter 7

No.	Course	Q.H.
PTH 1330	Clin. Kinesiology	4
PTH 1335	Phys. Thrpy. II	3
PTH 1340	Phys. Thrpy. III	4
PTH 1345	Clin. Medicine II	3
PTH 1350	Clin. Psychiatry	2

Fourth Year**Quarter 8**

No.	Course	Q.H.
PTH 1355	Phys. Thrpy. IV	3
PTH 1360	Phys. Thrpy. V	4
PTH 1365	Neuroanat.	4
PTH 1370	Clin. Seminar	2

Quarter 9

No.	Course	Q.H.
PTH 1375	Phys. Thrpy. VII	2
PTH 1380	Super. Clin. Educ.	5
PTH 1385	Clin. Medicine III	3
PTH 1390	Phys. Thrpy. VI	2
PTH 1395	Phys. Thrpy. V cont.	1

Fifth Year**Quarter 10**

No.	Course	Q.H.
PTH 1400	Admin.	3
PTH 1405	Research for Phys. Thrpy.	4
PTH 1410	Phys. Thrpy. VIII	2
PTH 1415	Super. Clin. Ed. II	
	Elective	
	Elective	

Quarter 11

No.	Course	Q.H.
PTH 1420	Phys. Thrpy. In Hlth. Care Syst.	3
PTH 1425	Psychosoc. Asp. of Illness	3
PTH 1450	Invest. Studies	6
	Elective	4

Department of Recreation and Leisure Studies**Areas of Concentration Required Courses****Quarter Offered****1. Therapeutic Recreation**

HSL 1460	Process of Aging	6-8-10
HSL 1463	Overview of Physical Disabilities	6-8-10
HSL 1467	Social and Psychological Impacts of Disabilities	8-10
HSL 1464	Program Planning in Therapeutic Recreation	8-10
HSL 1466	Foundations of Psychological Services In Therapeutic Recreation	10-11
Plus thirteen quarter hours of guided department electives		

2. Recreation Management

HSL 1426	Budget Analysis	6-8-10
HSL 1446	Elements of Outdoor Recreation Planning	6-8-10
HSL 1421	Administration of Recreation and Parks	6-8-10
HSL 1422	Program Evaluation	7-11
Plus sixteen quarter hours of guided department electives		

3. Outdoor Recreation/Environment Education

HSL 1427	Survey of Facilities	7-11
HSL 1443	Interpretations of Economic Social History	6-8-10
HSL 1444	Environmental Education	7-8-11
HSL 1445	Seminar on Environmental Issues and Legislation	6-8-10
HSL 1446	Elements of Outdoor Recreation Planning	6-8-10
Plus thirteen quarter hours of guided department electives		

Specimen Programs in Teacher Preparation

General Requirements:

Students must complete the following requirements to earn a Bachelor of Science degree in Education:

1. Distribution requirements with a minimum of sixteen quarter hours in each one of these areas: humanities, mathematics/sciences, and social sciences.

2. Major course requirements as listed on pages 27–31. (In addition to those courses required of all Elementary Education majors, students in this major must take designated courses in one area of emphasis chosen from the following: humanities, early childhood education, social sciences, mathematics/sciences, language/reading, and special education.)

3. Designated electives offered by the College of Arts and Sciences and the Boston-Bouvé College of Human Development Professions. These electives, which depend on the particular program of study, are in the areas of English, history, drama/speech, political science, economics, earth science, and the foundations of education.

There is no language requirement.

As early as possible students should discuss their curriculum questions and academic needs with a representative of the Dean's Office or a faculty adviser.

Specimen Program in Early Childhood Education (K-3)

Freshman Year (48 Q.H.)

HST 1101 Western Civ. I
 ENG 1110 Freshman English I
 ED 1100 Education and Social Science
 ED 1101 Education for the Future
 GEO ____ Earth Science (Elective)
 HST 1102 Western Civ. II
 ECN 1115 Economics
 GEO ____ Earth Science (Elective)
 POL ____ Political Science (Elective)
 ED 1105 Day Care and Nursery Schools
 ENG 1111 Freshman English II
 ENG ____ English (Elective)

Middler Year (35 Q.H.)

ED 1400 Fundamentals of Reading I
 ED 1408 Math/Science I
 ED 1405 Literature and Learning Material
 ED 1409 Math/Science II
 ED 1402 Fundamentals of Reading II (6 Q.H.)
 ED ____ Educational Humanities Elective
 POL ____ Political Science Elective
 HST ____ History Elective

Senior Year (32 Q.H.)

ED 1404 Linguistics and Reading
 SLA 1300 Semantics and Syntax
 ED 1417 Student Teaching (8 Q.H.)
 HST ____ History Elective
 Math/Science Elective
 Elective
 Elective

Sophomore Year (30 Q.H.)

ED 1104 Analysis of the Instructional Process
 ED 1102 Human Development I
 CRS 1200 Introduction to Special Education
 HSL 1260 Motor Skills Development (2 Q.H.)
 SLA 1101 Introduction to Speech and Hearing
 ED 1106 Creative Expression in Children
 ENG ____ English Elective
 Humanities Elective

Junior Year (36 Q.H.)

ED 1406 Elementary Education Curriculum I
 ED 1403 Remedial Reading
 ED 1407 Elementary Education Curriculum II
 ED 1306 Measurement and Evaluation
 COP 1353 Professional Development (1 Q.H.)
 ED 1304 Language and Cognition
 ED 1318 Seminar in Early Childhood
 ED 1406 Field Placement (2 Q.H.)
 DRA ____ Drama or
 SPC ____ Speech
 Math/Science Elective

182 Q.H. = Minimum graduation requirement

Specimen Program in Elementary Education (Humanities Emphasis)

Freshman Year (48 Q.H.)

HST 1101 Western Civ. I
 ENG 1110 Freshman English I
 ED 1100 Education and Social Science
 ED 1101 Education for the Future
 GEO ____ Earth Science (Elective)
 HST 1102 Western Civ. II
 ECN 1115 Economics
 GEO ____ Earth Science (Elective)
 POL ____ Political Science (Elective)
 ENG 1111 Freshman English II
 ENG ____ English (Elective)
 ED ____ Educational Sociology Elective

Middler Year (34 Q.H.)

ED 1400 Fundamentals of Reading I
 ED 1408 Math/Science I
 ED 1405 Literature and Learning Materials
 ED 1409 Math/Science II
 ED 1402 Fundamentals of Reading II (6 Q.H.)
 ED ____ Educational Humanities Elective
 POL ____ Political Science Elective
 Humanities Elective

Senior Year (32 Q.H.)

ED 1417 Student Teaching (8 Q.H.)
 Math/Science Elective
 Humanities Elective
 Humanities Elective
 Humanities Elective
 Elective
 Elective

Sophomore Year (32 Q.H.)

ED 1104 Analysis of the Instructional Process
 ED 1102 Human Development I
 CRS 1200 Introduction to Special Education
 ED 1103 Human Development I
 ENG ____ English (Elective)
 Humanities (Elective)
 HST ____ History Elective
 Elective

Junior Year (33 Q.H.)

ED 1406 Elementary Education Curriculum I
 ED 1407 Elementary Education Curriculum II
 ED 1306 Measurement and Evaluation
 COP 1353 Professional Development (1 Q.H.)
 HST ____ History Elective
 DRA ____ Drama or
 SPC ____ Speech
 Math/Science Elective
 Humanities Elective
 Humanities Elective

182 Q.H. = Minimum graduation requirement

Specimen Program in Elementary Education (Language/Reading Emphasis)

Freshman Year (48 Q.H.)

HST 1101 Western Civ. I
 ENG 1110 Freshman English I
 ED 1100 Education and Social Science
 ED 1101 Education for the Future
 GEO ____ Earth Science Elective
 HST 1102 Western Civ. II
 ECN 1115 Economics
 GEO ____ Earth Science Elective
 POL ____ Political Science Elective
 ENG 1111 Freshman English II
 ENG ____ English Elective
 ED ____ Educational Sociology Elective

Sophomore Year (33 Q.H.)

ED 1104 Analysis of the Instructional Process
 ED 1102 Human Development I
 CRS 1200 Introduction to Special Education
 ED 1103 Human Development II
 ENG ____ English Elective
 Humanities Elective
 HST ____ History Elective
 Elective

Middler Year (35 Q.H.)

- ED 1400 Fundamentals of Reading I
- ED 1408 Math/Science I
- ED 1405 Literature and Learning Materials
- ED 1409 Math/Science II
- ED 1402 Fundamentals of Reading II (6 Q.H.)
- ED ____ Educational Humanities Elective
- POL ____ Political Science Elective
- Elective

Senior Year (32 Q.H.)

- ED 1417 Student Teaching (8 Q.H.)
- Language/Reading
- Language/Reading
- Math/Science Elective
- Elective
- Elective

Junior Year (34 Q.H.)

- ED 1406 Elementary Education Curriculum I
- ED 1407 Elementary Education Curriculum II
- ED 1306 Measurement and Evaluation
- COP 1353 Professional Development (1 Q.H.)
- HST ____ History Elective
- DRA ____ Drama or
- SPC ____ Speech
- ED 1403 Remedial Reading
- ED 1404 Linguistics and Reading
- Math/Science Elective

182 Q.H. = Minimum graduation requirement

**Specimen Program in Elementary Education
(Social Sciences Emphasis)**

Freshman Year (48 Q.H.)

- HST 1101 Western Civ. I
- ENG 1110 Freshman English I
- ED 1100 Education and Social Science
- ED 1101 Education for the Future
- GEO ____ Earth Science Elective
- HST 1102 Western Civ. II
- ECN 1115 Economics
- GEO ____ Earth Science Elective
- POL ____ Political Science Elective
- ENG 1111 Freshman English II
- ENG ____ English Elective
- ED ____ Educational Sociology Elective

Middler Year (35 Q.H.)

- ED 1400 Fundamentals of Reading I
- ED 1408 Math/Science I
- ED 1405 Literature and Learning Materials
- ED 1409 Math/Science II
- ED 1402 Fundamentals of Reading II (6 Q.H.)
- ED ____ Educational Humanities Elective
- POL ____ Political Science Elective
- Social Science Elective

Senior Year (32 Q.H.)

- MED 1417 Student Teaching (8 Q.H.)
- Math/Science Elective
- Social Science Elective
- Elective
- Elective
- Elective

182 Q.H. = Minimum graduation requirement

Sophomore Year (33 Q.H.)

- ED 1104 Analysis of the Instructional Process
- ED 1102 Human Development I
- CRS 1200 Introduction to Special Education
- ED 1103 Human Development II
- ENG ____ English Elective
- Humanities Elective
- HST ____ History Elective
- Elective

Junior Year (34 Q.H.)

- ED 1406 Elementary Education Curriculum I
- ED 1407 Elementary Education Curriculum II
- ED 1306 Measurement and Evaluation
- COP 1353 Professional Development (1 Q.H.)
- HST ____ History Elective
- DRA ____ Drama or
- SPC ____ Speech
- Math/Science Elective
- Social Science Elective
- Social Science Elective

Specimen Program in Elementary Education (Special Education Emphasis)

Freshman Year (48 Q.H.)

HST 1101	Western Civ. I
ENG 1110	Freshman English I
ED 1100	Education and Social Science
ED 1101	Education for the Future
GEO	Earth Science Elective
HST 1102	Western Civ. II
ECN 1115	Economics
GEO	Earth Science Elective
POL	Political Science Elective
ENG 1111	Freshman English II
ENG	English Elective
ED	Educational Sociology Elective

Middler Year (35 Q.H.)

ED 1400	Fundamentals of Reading I
ED 1408	Math/Science I
ED 1405	Literature and Learning Material
ED 1409	Math/Science II
ED 1402	Fundamentals of Reading II (6 Q.H.)
ED	Educational Humanities Elective
POL	Political Science Elective
PSY 1373	Psychology of Abnormal Behavior

Senior Year (32 Q.H.)

ED 1417	Student Teaching (8 Q.H.)
CRS 1306	Introduction to Rehabilitation
CRS 1301	Diagnostics in Special Education
CRS 1304	Socio-Psycho Dynamics of Family Life
CRS 1302	Methods and Materials of Special Education
	Math/Science Elective
	Math/Science Elective

Sophomore Year (33 Q.H.)

ED 1104	Analysis of the Instructional Process
ED 1102	Human Development I
CRS 1200	Introduction to Special Education
ED 1103	Human Development II
ENG	English Elective
SLA 1101	Introduction Speech and Hearing Humanities Elective
HST	History Elective

Junior Year (34 Q.H.)

ED 1406	Elementary Education Curriculum I
ED 1407	Elementary Education Curriculum II
ED 1306	Measurement and Evaluation
COP 1353	Professional Development (1 Q.H.)
HST	History Elective
DRA	Theatre or
SPC	Speech
CRS 1300	Introduction to Learning Disabilities
CRS 1305	Psychology of the Mentally Retarded
CRS 1030	Introduction to the Emotionally Disturbed

182 Q.H. = Minimum graduation requirement

Specimen Program in Speech and Hearing

First Year

Quarter 1

		Q.H.
ENG 1110	Fresh. English I	4
ED 1100	Ed. & Soc. Sci.	4
BIO 1181	Hum. Orgnsm.	4
	Elective*	4

Quarter 2

		Q.H.
ENG 1111	Fresh. English II	4
SLA 1100	Bs. Man. Comm.	4
	Elective*	4
	Elective*	4

Quarter 3

		Q.H.
SLA 1101	Intro. Speech	4
	Elective*	4
	Elective*	4
	Elective*	4

Second Year

Quarter 4

		Q.H.
ED 1307	Intro. Ed. Stat.	4
SLA 1200	Hearing Sci.	4
CRS 1200	Intro. Spec. Ed.	4
	Elective*	4

Quarter 5

		Q.H.
ED 1102	Hum. Dev. I	4
SLA 1201	Anat. Voc. Mech.	4
	Elective*	4
	Elective*	4

Third Year**Quarter 6**

SLA 1301	Dev. Phonology	4
PSY 1272	Personality I	4
SLA 1300	Dev. Semantics	4
	Elective*	4

Quarter 7

PSY 1273	Personality II	4
SLA 1302	Phonemic Dis.	4
SLA 1303	Intro. Audiology	4
	Elective*	4

Fifth Year**Quarter 10**

PSY 1373	Abn. Psych. I	4
SLA 1500	Psychoacoustics Lab.	4
	Elective*	4

Quarter 10a

SLA 1501	Clin. Prac.	8
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Quarter 11

PSY 1374	Psych. II	4
	Elective*	4

Fourth Year**Quarter 8**

SLA 1400	Speech Sci.	4
ED 1400	Fund. Read. I	4
SLA 1401	Fluency Dis.	4
COP 1353	Prof. Dev.	4

Quarter 9

SLA 1402	Diagnostic Tech.	4
SLA 1403	Orient. Clin. Prac.	4
SLA 1404	Intro. Psychoacoustics	1
	Elective*	4

*Electives must include: 8 Q.H. in Ed. Soc.; 4 Q.H. in Ed. Psych.; 16 Q.H. in Lib. Arts Humanities; 4 Q.H. in Lib. Arts Soc. Sci.; 4 Q.H. in Ed.; and 8 Q.H. in Lib. Arts Math/Sci.

177 Q.H. = Minimum graduation requirement.

College of Business Administration

Specimen Program for First Three Quarters

The courses taken in the first three quarters are the same for all concentrations.

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
ACC 1111	Acct. Prin. I	4	ACC 1112	Acct. Prin. II	4	MGT 1415	Intro. Bus.	4
MTH 1114	Fund. of Math.	4	ECN 1105	Prin. of Econ. (Macro)	4	ENG 1111	Fresh. Eng. II	4
ENG 1110	Fresh. Eng. I	4		2 Nonbus. Electives	8	ECN 1106	Prin. of Econ. (Micro)	4
	Nonbus. Elective	4					Nonbus. Elective	4

During the five-year program at least one elective must be taken from the approved International elective list.

Accounting

Quarter 4	MSC 1200, Business Statistics 1; MSC 1226, Introduction to Data Processing; two nonbusiness electives.
Quarter 5	MSC 1201, Business Statistics 2; three nonbusiness electives.
Quarter 6	ACC 1331, Intermediate Accounting 1; HRM 1431, Complex Organizations; MKT 1435, Introduction to Marketing; MSC 1433, Business Modeling.
Quarter 7	ACC 1332, Intermediate Accounting 2; ACC 1339, Cost Accounting 1; HRM 1432, Organizational Behavior; FIN 1438, Introduction to Finance.
Quarter 8	ACC 1340, Cost Accounting 2; ACC 1343, Intermediate Accounting 3; nonbusiness elective; open elective.

- Quarter 9** MGT 1446, Business and Society; ACC 1348, Accounting Theory and Practice, *or* ACC 1349, Accounting Planning and Control; MSC 1441, Operations Management; open elective.
- Quarter 10** MGT 1450, Business Policy; three open electives.
- Quarter 11** Three open electives; nonbusiness elective.

Entrepreneurship and New Venture Management

- Quarter 4** MSC 1200, Business Statistics 1, MSC 1226, Introduction to Data Processing; two nonbusiness electives.
- Quarter 5** MSC 1201, Business Statistics 2; three nonbusiness electives.
- Quarter 6** HRM 1431, Complex Organizations; ENT 1350, Small Business Management; MKT 1435, Introduction to Marketing; MSC 1433, Business Modeling.
- Quarter 7** HRM 1432, Organizational Behavior; FIN 1438, Introduction to Finance; two open electives.
- Quarter 8** ENT 1344, Operations Analysis and Venture Capital; two nonbusiness electives; open elective.
- Quarter 9** FIN 1770, Small Business Finance; MGT 1446, Business and Society; MSC 1441, Operations Management; open elective.
- Quarter 10** MGT 1450, Business Policy; ENT 1352, New Venture Creation; nonbusiness elective; open elective.
- Quarter 11** ENT 1358, Small Business Institute Field Project; two open electives.

Finance and Insurance

- Quarter 4** MSC 1200, Business Statistics 1; MSC 1226, Introduction to Data Processing; two nonbusiness electives.
- Quarter 5** MSC 1201, Business Statistics 2; three nonbusiness electives.
- Quarter 6** FIN 1438, Introduction to Finance; FIN 1333, Money and Business Activity; HRM 1431, Complex Organizations; nonbusiness elective.
- Quarter 7** FIN 1335, Managerial Finance; MKT 1435, Introduction to Marketing; HRM 1432, Organizational Behavior; MSC 1433, Business Modeling.
- Quarter 8** FIN 1346, Investment Management; Finance elective; MSC 1441, Operations Management; open elective.
- Quarter 9** MGT 1446, Business and Society; Finance elective; nonbusiness elective; open elective.
- Quarter 10** MGT 1450, Business Policy; Finance elective; two open electives.
- Quarter 11** Four open electives.

Nonconcentration

- Quarter 4** MSC 1200, Business Statistics 1; three nonbusiness electives.
- Quarter 5** MSC 1201, Business Statistics 2; MSC 1226, Introduction to Data Processing; two nonbusiness electives.
- Quarter 6** HRM 1431, Complex Organizations; FIN 1438, Introduction to Finance; MSC 1433, Business Modeling; open elective.
- Quarter 7** HRM 1432, Organizational Behavior; MKT 1435, Introduction to Marketing; business elective; open elective.
- Quarter 8** MSC 1441, Operations Management; two business electives; open elective.
- Quarter 9** MGT 1446, Business and Society; business elective; nonbusiness elective; open elective.
- Quarter 10** MGT 1450, Business Policy; business elective; nonbusiness elective; open elective.
- Quarter 11** Business elective; three open electives.

Human Resources Management

- Quarter 4** MSC 1200, Business Statistics 1; MSC 1226, Introduction to Data Processing; two nonbusiness electives.
- Quarter 5** MSC 1201, Business Statistics 2; three nonbusiness electives.
- Quarter 6** HRM 1431, Complex Organizations; MKT 1435, Introduction to Marketing; MSC 1433, Business Modeling; open elective.
- Quarter 7** HRM 1332, People and Productivity; HRM 1432, Organizational Behavior; FIN 1438, Introduction to Finance; open elective.
- Quarter 8** HRM 1348, Reward Systems; HRM 1439, Assessment of Prospective Employees; nonbusiness elective; open elective.
- Quarter 9** MGT 1446, Business and Society; MSC 1441, Operations Management; Human Resources Management elective; open elective.
- Quarter 10** HRM 1345, Contemporary Labor Issues; MGT 1450, Business Policy; Human Resources Management elective; open elective.
- Quarter 11** Nonbusiness elective; three open electives.

International Business Administration

- Quarter 4** MSC 1200, Business Statistics 1; three nonbusiness electives.
- Quarter 5** MSC 1201, Business Statistics 2; two nonbusiness electives.
- Quarter 6** HRM 1431, Complex Organizations; INB 1338, Introduction to International Business; FIN 1438, Introduction to Finance; open elective.
- Quarter 7** HRM 1432, Organizational Behavior; MKT 1435, Introduction to Marketing; MSC 1433, Business Modeling; open elective.
- Quarter 8** MSC 1441, Operations Management; business elective; International nonbusiness elective; open elective.
- Quarter 9** MGT 1446, Business and Society; International nonbusiness elective; two open electives.
- Quarter 10** MGT 1450, Business Policy; International nonbusiness elective; two open electives.
- Quarter 11** INB 1352; Seminar in International Business; International business elective; two open electives.

Management

- Quarter 4** MSC 1200, Business Statistics 1; three nonbusiness electives.
- Quarter 5** MSC 1201, Business Statistics 2; MSC 1226, Introduction to Data Processing; two nonbusiness electives.
- Quarter 6** FIN 1438, Introduction to Finance; HRM 1431, Complex Organizations; MSC 1433, Business Modeling; open elective.
- Quarter 7** MKT 1435, Introduction to Marketing; HRM 1432, Organizational Behavior; ACC 1330, Cost Accounting; HRM 1332, People and Productivity.
- Quarter 8** MGT 1345, Legal Aspects of Business; MSC 1441, Operations Management; business elective; open elective.
- Quarter 9** MGT 1446, Business and Society; business elective; nonbusiness elective; open elective.
- Quarter 10** MGT 1450, Business Policy; nonbusiness elective; two open electives.
- Quarter 11** Business elective; three open electives.

Marketing

- Quarter 4** MSC 1200, Business Statistics 1; MSC 1226, Introduction to Data Processing; two nonbusiness electives.
- Quarter 5** MSC 1201, Business Statistics 2; three nonbusiness electives.
- Quarter 6** MKT 1435, Introduction to Marketing; HRM 1431, Complex Organizations; nonbusiness elective; open elective.

Quarter 7	FIN 1438, Introduction to Finance; HRM 1432, Organizational Behavior; MKT 1331, Marketing Management; MSC 1433, Business Modeling.
Quarter 8	MKT 1341, Marketing Research; Marketing elective; nonbusiness elective; open elective.
Quarter 9	MGT 1446, Business and Society; MSC 1441, Operations Management; Marketing elective; open elective.
Quarter 10	MKT 1351, Competitive Strategies; MGT 1450, Business Policy; two open electives.
Quarter 11	Marketing elective; three open electives.

Transportation and Physical Distribution Management

Quarter 4	MSC 1200, Business Statistics 1; three nonbusiness electives.
Quarter 5	MSC 1201, Business Statistics 2; MSC 1226, Introduction to Data Processing; two nonbusiness electives.
Quarter 6	HRM 1431, Complex Organizations; FIN 1438, Introduction to Finance; TRN 1333, Introduction to Transportation; open elective.
Quarter 7	HRM 1432, Organizational Behavior; Transportation elective; MKT 1435, Introduction to Marketing; TRN 1335, Current Issues in Transportation Policy; MSC 1433, Business Modeling.
Quarter 8	MSC 1441, Operations Management; Transportation elective; nonbusiness elective; open elective.
Quarter 9	MGT 1446, Business and Society; TRN 1344, Physical Distribution Management; nonbusiness elective; open elective.
Quarter 10	MGT 1450, Business Policy; Transportation elective; two open electives.
Quarter 11	TRN 1353, Seminar in Transportation; three open electives.

College of Computer Science

Specimen Program in Computer Science

First Year

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
COM 1100	PASCAL I	4	COM 1101	PASCAL II	4	MTH 1125	Calculus III	4
MTH 1123	Calculus I	4	MTH 1124	Calculus II	4	PHY 1241	Physics I	4
ENG 1110	Fresh. Engl. I	4	MTH 1409	Discr. Math. I	4	COM 1201	Data Struc.	4
HST 1101	Western Civ.	4	HST 1102	Western Civ.	4	ENG 1111	Fresh. Engl. II	4
			COM 1113	COBOL Lab	1	COM 1110	FORTTRAN Lab	1

Second Year

Quarter 4			Quarter 5		
No.	Course	Q.H.	No.	Course	Q.H.
PHY 1242	Physics II	4	PHY 1243	Physics III	4
COM 1130	Assembly Lang. 1	4	COM 1131	Assembly Lang. II	4
MTH 1223	Calculus IV	4	MTH 1237	Discrete Math II	4
COM 1111	DCL Lab	1	COM 1205	Software Design	4
COM 1102	LISP	4			

Third Year

Quarter 6			Quarter 7		
No.	Course	Q.H.	No.	Course	Q.H.
ECE 1191	Comp. Org. & Des. I	4	ECE 1192	Comp. Org. & Des. II	4
MTH 1301	Linear Algebra	4	MTH 1387	Probability	4
COM	C.S. Elective (1)	4	COM	C.S. Elective (2)	4
	Elective/Subarea (1)	4	ENG 1001	Tech. Writing	4

Fourth Year**Quarter 8**

No.	Course	Q.H.
COM ____	C.S. Elective (3)	4
COM ____	C.S. Elective (4)	4
	Elective/Subarea (2)	4
	Elective/Subarea (3)	4

Quarter 9

No.	Course	Q.H.
COM ____	C.S. Elective (5)	4
COM ____	C.S. Elective (6)	4
SOC 1485	Computers & Soc.	4
	Elective/Subarea (4)	4

Fifth Year**Quarter 10**

No.	Course	Q.H.
COM ____	C.S. Elective (7)	4
	Elective/Subarea (5)	4
	Elective/Subarea (6)	4
	Elective/Subarea (7)	4

Quarter 11

No.	Course	Q.H.
COM ____	C.S. Elective (8)	4
COM 1620	C.S. Seminar	1
	Elective/Subarea (8)	4
	Elective/Subarea (9)	4
	Elective/Subarea (10)	4

Note: Three of the Computer Science electives must form a complete track.

Computer Science Major Requirements Checklist**Computer Science****Level I**

No.	Course	Q.H.
COM 1100	PASCAL I	4
COM 1101	PASCAL II	4
COM 1102	LISP	4
COM 1110	FORTRAN Lab	1
COM 1113	COBOL Lab	1
COM 1111	DCL Lab	1
COM 1201	Data Structures	4
COM 1205	Software Design	4
COM 1130	Assembly Language I	4
COM 1131	Assembly Language II	4

Level II (select eight courses, including at least one complete track)

No.	Course	Q.H.
Data Base Track		
COM 1310	File Structures	4
COM 1315	Data Base Mngmt. I	4
COM 1316	Data Base Mngmt. II	4
Systems Track		
COM 1330	Systems Prgrmmg.	4
COM 1335	Operating Systems I	4
COM 1336	Operating Systems II	

Languages Track

COM 1350	Automata & Form. Lan.	4
COM 1355	Compiler Design I	4
COM 1356	Compiler Design II	4

Electives

COM 1358	Anal. of Prog. Lang.	4
COM 1390	Analysis of Algorithms	4
COM 1410	Artificial Intelligence	4
COM 1370	Computer Graphics	4

Seminar (To be taken during senior year.)

COM 1620	Computer Sci. Sem.	1
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Mathematics**Level I**

No.	Course	Q.H.
MTH 1123	Calculus I	4
MTH 1124	Calculus II	4
MTH 1125	Calculus III	4
MTH 1223	Calculus IV	4
MTH 1409	Discrete Structures I	4
MTH 1237	Discrete Structures II	4

Level II

No.	Course	Q.H.
MTH 1387	Probability	4
MTH 1301	Linear Algebra	4

Physics**Level II**

No.	Course	Q.H.	No.	Course	Q.H.
			PHY 1241	Physics I	4
			PHY 1242	Physics II	4
			PHY 1243	Physics III	4

Electrical Engineering**Level II**

No.	Course	Q.H.	No.	Course	Q.H.
			ECE 1191	Computer Org. and Des. I	4
			ECE 1192	Computer Org. and Des. II	4

Other Subject Areas**Level II**

No.	Course	Q.H.	No.	Course	Q.H.
			ENG 1110	Freshman English I	4
			ENG 1111	Freshman English II	4
			ENG 1125	Technical Writing	4
			HST 1101	Western Civilization	4
			SOC 1485	Computers and Society	4

Electives (total 24 Q.H.)**Subarea (total 20 Q.H.)**

Computer Science Requirements

Requirements for Computer Science Majors

Computer Science Courses

Computer Science courses fall into one of two levels. Level I consists of Courses: COM 1100, COM 1101, COM 1102, COM 1130, COM 1131, COM 1201, COM 1205; Labs: COM 1110, COM 1111, COM 1113.

All Level I courses and labs are required for the major. The rest of the computer science courses are in Level II. Majors must take eight Level II courses; three of these must form one of the following tracks: Data Base Track COM 1310, COM 1315, COM 1316; Systems Track COM 1330, COM 1335, COM 1336; Languages Track COM 1350, COM 1355, COM 1356.

Finally, majors must take the one-credit seminar COM 1620 during their senior year.

Mathematics Courses

Major must take the following eight mathematics courses; Level I Calculus MTH 1123, MTH 1124, MTH 1125, and MTH 1223; Discrete Mathematics MTH 1409, MTH 1237.

Level II Probability MTH 1387; Linear Algebra MTH 1301.

Physics Courses

Majors must take the following three physics courses: Physics PHY 1241, PHY 1242, and PHY 1243.

Electrical Engineering Courses

Majors must take the following two electrical engineering courses: Digital Computers ECE 1191 and ECE 1192.

Other Subject Areas

Majors must take the following five courses: English ENG 1110 and ENG 1111; Technical Writing ENG 1125; Computers and Society SOC 1485; Western Civilization HST 1101.

In addition, majors must take at least five courses in a selected subarea of humanities, science, social science, business, education, or engineering. The College of Computer Science will provide lists of suitable courses in a variety of subareas.

Majors have six free electives. However, at least three courses among the total eleven (five in the subarea and six electives) must be in social sciences or humanities.

NOTES:

1. The total number of credit hours required for graduation is 180.

2. During the first two years, students should take all Level I computer science and mathematics courses, physics, English, Western Civilization, and one other course. The three computer science track courses should be taken in the third and fourth year. See the Specimen Program for details on program arrangement.

Requirements for Computer Science Minors

In addition to fulfilling the requirements of their major department, students who wish to minor in computer science must take the seven Level I full courses: COM 1100, COM 1101, COM 1102, COM 1130, COM 1131, COM 1201, and COM 1205.

College of Criminal Justice

Specimen Program in Criminal Justice

First Year

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
CJ 1101	Admin. Crim. Just.	4	ECN 1116	Prin./Prob. Econ.	4	SOC 1100	Intro. Soc.	4
ECN 1115	Prin./Prob. Econ.	4	POL 1111	Intro. Amer. Gov.	4	PSY 1112	Fnd. Psych. II	4
POL 1110	Intro. Politics	4	ENG 1110	Fresh. Eng. I	4	ENG 1111	Fresh. Eng. II	4
PSY 1111	Fnd. Psych I	4	CJ 1425	Crit. Issues in Crim. Jus.	4	CJ 1113	Crit. Issues in Crim. Jus. Admin.	4

Second Year

Quarter 4			Quarter 5		
No.	Course	Q.H.	No.	Course	Q.H.
POL 1318	State & Loc. Gov.	4		Math/Sci. Require.	4
CJ 1251	Crim. Law	4		Non-Crim. Jus.	
CJ 1201	Criminology	4		Elective	4
	Math/Sci. Require.	4	CJ	Crim. Jus. Elective	4
			CJ 1252	Constitutional Prob.	4

Third Year**Quarter 6****Quarter 7**

No.	Course	Q.H.	No.	Course	Q.H.
CJ	Crim. Jus. Elective	4	CJ	Crim. Jus. Elective	4
	Non-Crim. Justice	4		Non-Crim. Jus.	4
	Elective			Elective	
CJ 1451	Crim. Jus.	4		Non-Crim. Jus.	4
	Research	4		Elective	4
HST 1101	Western Civ. I	4	HST 1102	Western Civ. II	4

Fourth Year**Fifth Year****Quarters 8-11**

No.	Course	Q.H.	No.	Course	Q.H.
CJ	Crim. Jus. Electives	24		Non-Crim. Jus. Electives	36

College of Engineering

Specimen Program in Chemical Engineering

All courses in Chemical Engineering must be taken in sequence shown.

First Year**Quarter 1****Quarter 2****Quarter 3**

No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
MTH 1123	Calculus I	4	MTH 1124	Calculus II	4	MTH 1125	Calculus III	4
PHY 1221	Physics I	4	PHY 1222	Physics II	4	PHY 1223	Physics III	4
GE 1100	Comp. for Eng.	4	GE 1110	Eng. Graph. and	4	CHM 1132	Gen. Chem.	4
ENG 1111	Intro. Lit.	4		Des.	4	ENG 1113	Gr. Th. Lit.	4
			CHM 1131	Gen. Chem.	4			

First-year pattern of two-term courses may vary according to assigned section.

Quarters 4, 6, 8, and 10 offered Fall and Winter

Quarters 5, 7, and 9 offered Spring and Summer.

Second Year**Quarter 4****Quarter 5**

No.	Course	Q.H.	No.	Course	Q.H.
MTH 1223	Calculus IV	4	MTH 1224	Calculus V	4
PHY 1224	Physics IV	4	CHE 1202	Chem. Engr. Cal. II	4
CHE 1201	Chem. Engr. Cal. I	4	CHE 1203	Poly Sci. and	4
CHM 1261	Organic Chem. I	4		Engr.	4
PHY 1521	Physics Lab I	1	CHM 1262	Organic Chem. II	4
			PHY 1522	Physics Lab II	1

Third Year**Quarter 6**

No.	Course	Q.H.
MTH 1225	Math. Analysis I	4
CHE 1301	Chem. Engr. I	4
CHM 1391	Phys. Chem. I	4
ECN 1115	Economics I	4

Quarter 7

No.	Course	Q.H.
MTH 1226	Math. Analysis II	4
CHE 1302	Chem. Engr. II	4
CHM 1392	Phys. Chem. II	4
ECN 1116	Economics II	4

Fourth Year**Quarter 8**

No.	Course	Q.H.
CHE 1401	Trans. Phen. I	4
CHE 1410	Exp. Methods I	4
CHE 1420	Chem. Engr. Therm.	4
	Soc. Sci./Hum. Elective*	4

Quarter 9

No.	Course	Q.H.
CHE 1402	Trans. Phen. II	4
CHE 1411	Exp. Methods II	4
CHE 1421	Chem. Engr. Kinet.	4
	Soc. Sci./Hum. Elective*	4

Fifth Year**Quarter 10****

No.	Course	Q.H.
CHE 1501	Proc. Des. I	6
CHE 1503	Projects I	6
CHE	Chem. Engr. Elective	4
CHE	Chem. Engr. Elective	4
	Soc. Sci./Hum. Elective*	4

Quarter 11**

No.	Course	Q.H.
CHE 1502	Proc. Des. II	6
CHE 1504	Projects II	6
CHE	Chem. Engr. Elective	4
CHE	Chem. Engr. Elective	4
	Soc. Sci./Hum. Elective*	4

Specimen Program in Civil Engineering**First Year****Quarter 1**

No.	Course	Cl.	Q.H.
GE 1100	Comp. for Engr.	3	4
MTH 1123	Calculus I	3	4
PHY 1221	Physics I	3	4
ENG 1111	Fresh. Engr. II	3	4

Quarter 2

No.	Course	Cl.	Q.H.
GE 1110	Engr. Graph. and Des.	3	4
MTH 1124	Calculus II	3	4
PHY 1222	Physics II	3	4
CHM 1131	Gen. Chem.	3	4

Quarter 3

No.	Course	Cl.	Q.H.
MTH 1125	Calculus III	3	4
PHY 1223	Physics III	3	4
CHM 1132	Gen. Chem.	3	4
ENG 1111	Gr. Th. Lit.	3	4

*The elective courses completed must have a combined total of at least eleven engineering science credits according to the department's list of elective courses.

**Quarters 10 and 11 must be approved by department adviser.

Second Year**Quarter 4**

No.	Course	Cl.	Q.H.
PHY 1521	Physics Lab I	0(3)	1
MTH 1223	Calculus IV	3	4
CIV 1620	Engr. Meas.	3	4
CIV 1621	Engr. Meas. Lab.	0(3)	2
CIV 1210	Struct. Mech. I	3	4
CIV 1610	Comp. Appl. in CE	3	4
CIV 1510	Materials	3	4
CIV 1511	Materials Lab	0(3)	2

Quarter 5

No.	Course	Cl.	Q.H.
PHY 1522	Physics Lab II	0(3)	1
MTH 1224	Calculus V	3	4
ECN 1116	Economics II	3	4
CIV 1211	Struct. Mech. 2	3	4
CIV 1620	Engr. Meas.	3	4
CIV 1621	Engr. Meas. Lab	0(3)	2
CIV 1510	Materials	3	4
CIV 1511	Materials Lab	0(3)	2

CIV 1620, CIV 1621 offered Fall and Summer quarters.

CIV 1510, CIV 1511 offered Winter and Spring quarters.

Third Year**Quarter 6**

No.	Course	Cl.	Q.H.
MTH 1225	Math. Anal. I	3	4
	Soc. Sci./		
	Hum. Elec.	3	4
CIV 1310	Fluid Mech.	4	4
CIV 1220	Struc. Anal. I	4	4
	Struc. Lab	0(3)	2

Quarter 7

No.	Course	Cl.	Q.H.
IIS 1366	Eng. Economy	4	4
ME 1320	Dynamics	4	4
CIV 1340	Environ. Eng.	4	4
SPC 1115	Intro. Comm. Skill	4	4

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
ECE 1171	Elec. Engr. I	3	4
CIV 1410	Soil Mech.*	3	4
	Soil Mech. Lab* or	0(3)	2
CIV 1240	Concrete Des. 1*	3	4
	Tech. Elective	3	4
	Soc. Sci./		
	Hum. Elec.		

Quarter 9

No.	Course	Cl.	Q.H.
CIV 1340	Environ. Engr. 1	3	4
CIV 1240	Concrete Des. 1*	3	4
	or		
CIV 1410	Soil Mech.	3	4
CIV 1411	Soil Mech. Lab	(3)	2
	Tech. Elective		4
	Soc. Sci. Hum. Elective		4

Fifth Year**Quarter 10**

No.	Course	Cl.	Q.H.
CIV 1250	Struct. Des.	3	4
	Soc. Sci./		
	Hum. Elec.	3	4
	Tech. Elective	3	4
	Tech. Elective	3	4

Quarter 11

No.	Course	Cl.	Q.H.
	Gen. Elective†	3	4
	Tech. Elective	3	4
	Tech. Elective	3	4
	Tech. Elective	3	4

*In Quarter 8 one-half of the class takes CIV 1240, the other CIV 1410 and CIV 1411; in Quarter 9 the sections are reversed.

†This may be a technical or arts and sciences elective or any other course given at the University. The general elective may be interchanged with an arts and sciences elective in another quarter, with the approval of the Civil Engineering Department.

Technical Electives**Fall-Winter
Quarters 8 & 10****Spring
Quarters 9 & 11**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
CIV 1820	Special Topics		4	CIV 1820	Special Topics		4
CIV 1810	Special Topics		4	CIV 1810	Special Topics		4
CIV 1320	Hydraulic Eng.*	4	4	CIV 1630	C.E. Engr. Sys.	4	4
CIV 1212	Struct. Mech. III†	4	4	CIV 1550	Constr. Engr.	4	4
CIV 1241	Concrete Des. II†	4	4	CIV 1540	Highway Engr.	4	4
CIV 1430	Geotechnology	4	4	CIV 1251	Struct. Des. II†	4	4
CIV 1341	Environ. Engr. II*	4	4	CIV 1420	Found. Engr. †	4	4
CIV 1640	App. Probability†	4	4	CIV 1360	Environ. Des.*	4	4
CIV 1222	Struct. Analysis†	4	4	CIV 1660	Tech. Assess.	4	4
IIS 1346	Bas. Engr.			CIV 1650	Legal Aspects	4	4
	Statistics	4	4	CIV 1530	Transp. Engr.	4	4
IIS 1366	Engr. Economy†	4	4	CIV 1224	Struct. Analysis		
CIV 1350	Envl. &				III†	4	4
	Hydraulics Lab*	4	4	CIV 1370	Air Pollution*	4	4
				IIS 1346	Engr. Statistics	4	4
				IIS 1366	Engr. Economy	4	4

*Required for Environmental Concentration

†Recommended for Structures Concentration

Note: During the summer the Civil Engineering Department offers a limited number of technical electives. Students should check with the Department for specific information. Technical electives from other engineering departments may be elected with the approval of the Civil Engineering Department Curriculum Committee.

Specimen Program in Civil Engineering

Approved for progressive implementation beginning with second year for class of 1989.

First Year

Same as current program

Second Year**Quarter 4****Quarter 5**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
MTH 1223	Calc. IV	4	4	MTH 1224	Calc. V.	4	4
CIV 1210	Struc. Mech. 1	4	4	ECN 1116	Econ.	4	4
CIV 1610	Comb. App. CE	4	4	CIV 1211	Struc. Mech. II	4	4
CIV 1620	Engr. Meas.	4	4	CIV 1510	Materials	4	4
CIV 1621	Engr. Meas. Lab	(0)3	2	CIV 1511	Mat. Lab	(0)3	2
CIV 1610	Phys. Lab I	(0)3	1	PHY 1522	Phys. Lab II	(0)3	1

CIV 1510, CIV 1511 offered Winter and Spring Quarters.

CIV 1620, CIV 1621 offered Fall and Summer Quarters.

Third Year**Quarter 6****Quarter 7**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
MTH 1225	Math. Anal.	4	4	SPC 1115	Intro. Commun.		
CIV 1310	Fluid Mech.	4	4		Skills	4	4
	Lib. Arts			CIV 1340	Env. Engr. I	4	4
	Elective	4	4	IIS 1366	Eng. Econ.	4	4
CIV 1220	Des. & Struc.			ME 1320	Struct. Anal. I	4	4
	Anal.	4	4				
CIV 1226	Des. & Struc.						
	Anal. Lab	(0)3	2				

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
CIV 1410	Soil Mech.	4	4
CIV 1411	Soils Lab	0(3)	2
	Tech. Elective	4	4
	Tech. Elective	4	4
ECE 1171	Elect. Eng.	4	4

Quarter 9

No.	Course	Cl.	Q.H.
IIS 1366	Engr. Econ.	4	4
ECE 1171	Engr. Sci. Elective or Elec. Engr. I	4	4
	Tech. Elective	4	4
	Tech. Elective	4	4

Fifth Year**Quarter 10**

No.	Course	Cl.	Q.H.
	Tech. Elective	4	4
	Tech. Elective	4	4
CIV 1250	Steel Des. I	4	4

Quarter 11

No.	Course	Cl.	Q.H.
	Gen. Elective	4	4
	Lib. Arts Elective	4	4
	Tech. Elective	4	4
	Tech. Elective	4	4

The elective courses completed must have a combined total of at least thirteen design credits according to the department's list of elective courses.

Specimen Program in Electrical and Computer Engineering**First Year****Quarter 1**

No.	Course	Cl.	Q.H.
GE 1100	Comp. for Engr.	4	4
MTH 1123	Calculus I	4	4
PHY 1221	Physics I	4	4
ENG 1111	Fresh. Engl. II	4	4

Quarter 2

No.	Course	Cl.	Q.H.
GE 1110	Engr. Graph. and Des.	4	4
MTH 1124	Calculus II	4	4
PHY 1222	Physics II	4	4
CHM 1131	Gen. Chem.	4	4

Quarter 3

No.	Course	Cl.	Q.H.
MTH 1125	Calculus III	4	4
PHY 1223	Physics III	4	4
CHM 1132	Gen. Chem.	4	4
ENG 1113	Gr. Th. Lit.	4	4

Second Year**Quarter 4**

No.	Course	Cl.	Q.H.
MTH 1223	Calculus IV	4	4
PHY 1224	Physics	4	4
ECE 1211	Circ. and Sys. I	4	4
	Soc. Sci./Hum. Elec.	4	4
PHY 1521	Physics Lab	0(3)	1
ECE 1101	Elec. Engr. Lab 1-A	0(4)	1

Quarter 5

No.	Course	Cl.	Q.H.
MTH 1224	Calculus V	4	4
ME 1321	Mech.	4	4
ECE 1212	Circ. and Sys. II	4	4
	Soc. Sci./Hum. Elec.	4	4
PHY 1522	Physics Lab	0(3)	1
ECE 1102	Elec. Engr. Lab 1-B	0(4)	1

Third Year**Quarter 6**

No.	Course	Cl.	Q.H.
MTH 1225	Math. Anal. I	4	4
ECE 1213	Circ. and Sys. III	4	4
ECE 1331	Discrete Sys.	4	4
ME 1340	Therm. I	4	4
ECE 1301	Elec. Engr. Lab II-A	0(4)	1

Quarter 7

No.	Course	Cl.	Q.H.
MTH 1226	Math. Analysis II	4	4
ECE 1214	Circ. and Sys. IV	4	4
ECE 1346	Electronics A	4	4
ECE 1302	Elec. Engr. Lab II-B	0(4)	1
	Soc. Sci./Hum. Elective	4	4

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
ECE 1347	Electronics B	4	4
ECE 1361	Electromag. Fld. Thry. I	4	4
ME 1386	Material Sci. Soc. Sci./ Hum. Elec.	4	4
ECE 1304	Elec. Engr. Lab III-A		1

Quarter 9

No.	Course	Cl.	Q.H.
ECE 1348	Electronics C	4	4
ECE 1362	Electromag. Fld. Thry. II	4	4
ECE 1191	Intro. Dig. Comp. I Soc. Sci./ Hum. Elective	4	4
ECE 1305	Elec. Engr. Lab III-B	0(4)	1

Fifth Year**Quarter 10**

No.	Course	Cl.	Q.H.
ECE 1375	Electromech. Dynamics Soc. Sci./ Hum. Elec.	4	4
	Tech. Elec.	4	4
	Tech. Elec.	4	4
ECE 1307	Elec. Engr. Lab IV	0(4)	2

Quarter 11

No.	Course	Cl.	Q.H.
	Soc. Sci./ Hum. Elective Tech. Electives	4	4 8(12) 8(12)

Note: Seven arts and sciences electives (in either social sciences or humanities) are required for graduation.

Two of these may be taken on a pass/fail basis in SEPARATE quarters. Also, four technical electives are required for graduation.

Specimen Program in Power Systems**First Year****Quarter 1**

No.	Course	Q.H.
MTH 1123	Calculus I	4
PHY 1221	Physics I	4
GE 1100	Comp. for Engr.	4
ENG 1111	Fresh. Engr. II	4

Quarter 2

No.	Course	Q.H.
MTH 1124	Calculus II	4
PHY 1222	Physics II	4
GE 1110	Engr. Graph. and Des.	4
CHM 1131	Gen. Chem. I	4

Quarter 3

No.	Course	Q.H.
MTH 1125	Calculus III	4
PHY 1223	Physics III	4
CHM 1132	Gen. Chem.	4
ENG 1113	Gr. Th. Lit.	4

Second Year**Quarter 4**

No.	Course	Q.H.
MTH 1223	Calculus IV	4
PHY 1224	Physics IV	4
ECE 1211	Circ. and Sys. I Soc. Sci./ Hum. Elective	4
ECE 1101	Elec. Engr. Lab I-A	1
PHY 1521	Physics Lab I	1

Quarter 5

No.	Course	Q.H.
MTH 1224	Calculus V	4
ME 1321	Mech.	4
ECE 1212	Circ. and Sys. I Soc. Sci./ Hum. Elective	4
ECE 1102	Elec. Engr. Lab I-B	1
PHY 1522	Physics Lab II	1

Third Year

Quarter 6

No.	Course	Q.H.
MTH 1225	Math. Analysis I	4
ME 1340	Therm. I	4
ECE 1213	Circ. and Sys. III	4
ECE 1331	Discrete Sys.	4
ECE 1301	Elec. Engr. Lab II-A	1

Quarter 7

No.	Course	Q.H.
MTH 1226	Math. Analysis II	4
ECE 1214	Circ. and Sys. IV	4
ECE 1346	Electronics A	4
	Soc. Sci./ Hum. Elective	4
ECE 1302	Elec. Engr. Lab II-B	1

Quarters 4 and 6 offered Fall and Winter.
Quarters 5 and 7 offered Spring and Winter.

Fourth Year

Quarter 8 (Fall Only)

No.	Course	Q.H.
ME 1341	Therm. II	4
ECE 1347	Electronics B	4
ECE 1361	Electromag. Fld. Thry. I	4
ECE 1471	Elec. Pwr. Sys. I	4
ECE 1304	Elec. Engr. Lab III-A	

Quarter 9 (Spring Only)

No.	Course	Q.H.
ECE 1362	Electromag. Fld. Thry. II	4
ECE 1472	Elec. Power Sys. II	4
ECE 1348	Electronics C	4
	Soc. Sci./ Hum. Elective	4
ECE 1431	Elec. Engr. Pwr. Lab I	1

Fifth Year

Quarter 10 (Winter Only)

No.	Course	Q.H.
ME 1541	Nuclear Engr.	4
ECE 1376	Mach. and Sys	4
ECE 1378	Transients in Elec. Pwr. Sys.	4
	Soc. Sci./ Hum. Elective	4
ECE 1434	Elec. Engr. Pwr. Lab II	2

Quarter 11 (Spring Only)

No.	Course	Q.H.
ECE 1191	Intro. Dig. Comp.	4
ECE 1376	Mach. and Sys.	4
	A. & S. Elective	4
	Tech. Elective*	4

The elective courses completed must have a combined total of at least two design credits according to the department's list of elective courses

*In Quarter 11, only one technical elective is required for graduation.

Specimen Program in General Engineering

First Year

Quarter 1

No.	Course	Q.H.
MTH 1123	Calculus I	4
PHY 1221	Physics I	4
GE 1100	Comp. for Engr	4
ENG 1111	Fresh. Eng. II	4

Quarter 2

No.	Course	Q.H.
MTH 1124	Calculus II	4
PHY 1222	Physics II	4
GE 1110	Engr Graph and Des	4
	Soc Sci/ Hum. Elective	4

Quarter 3

No.	Course	Q.H.
MTH 1125	Calculus III	4
PHY 1223	Physics III	4
ENG 1113	Gr. Th. Lit.	4
	Soc. Sci./ Hum. Elective	4

Second Year**Quarter 4**

No.	Course	Q.H.
MTH 1223	Calculus IV	4
PHY 1224	Physics IV	4
	Engr. Sci. Elective	4
	Soc. Sci./	
	Hum. Elective	4
PHY 1521	Physics Lab I	1

Quarter 5

No.	Course	Q.H.
MTH 1224	Calculus V	4
	Engr. Sci. Elective	4
	Coord. Study	
	Elective	4
	Soc. Sci./	
	Hum. Elective	4
PHY 1521	Physics Lab II	1

Third Year**Quarter 6**

No.	Course	Q.H.
	Engr. Sci. Elective	4
	Coord. Study	
	Elective	4
	Coord. Study	
	Elective	4
	Soc. Sci./	
	Hum. Elective	4

Quarter 7

No.	Course	Q.H.
	Engr. Sci. Elective	4
	Engr. Sci. Elective	4
	Coord. Study	
	Elective	4
	Soc. Sci./	
	Hum. Elective	4

Fourth Year**Quarter 8**

No.	Course	Q.H.
	Engr. Sci. Elective	4
	Engr. Sci. Elective	4
	Coord. Study	
	Elective*	4
	Coord. Study	
	Elective	4

Quarter 9

No.	Course	Q.H.
	Engr. Sci. Elective	4
	Engr. Sci. Elective	4
	Coord. Study	
	Elective	4
	Coord. Study	
	Elective	4

Fifth Year**Quarter 10**

No.	Course	Q.H.
	Engr. Sci. Elective	4
	Engr. Sci. Elective	4
	Coord. Study	
	Elective	4
	Coord. Study	
	Elective	4

Quarter 11

No.	Course	Q.H.
	Engr. Sci. Elective	4
	Coord. Study	
	Elective	4
	Coord. Study	
	Elective	4
	Coord. Study	
	Elective	4

Note: Quarters 4, 6, 8, and 10 offered Fall and Winter; quarters, 5, 7, and 9 offered Spring and Summer.

*Coordinated Study electives are courses chosen to meet the student's career objectives; these courses will be selected in conjunction with the student's adviser and are subject to the adviser's approval.

Specimen Program in Industrial Engineering

First Year

Quarter 1

No.	Course	Q.H.
MTH 1123	Calculus I	4
PHY 1221	Physics I	4
GE 1100	Comp. for Engr.	4
ENG 1111	Fresh. Eng. II	4

Quarter 2

No.	Course	Q.H.
MTH 1124	Calculus II	4
PHY 1222	Physics II	4
GE 1110	Engr. Graph. and Des.	4
CHM 1131	Gen. Chem.	4

Quarter 3

No.	Course	Q.H.
MTH 1125	Calculus III	4
PHY 1223	Physics III	4
CHM 1132	Gen. Chem.	4
ENG 1113	Gr. Th. Lit.	4

Second Year

Quarter 4

No.	Course	Cl.	Q.H.
IIS 1200	Work Des.	3(3)	4
MTH 1223	Calculus IV	4	4
PHY 1224	Physics IV	4	4
ECN 1115	Economics I	4	4
PHY 1521	Physics Lab I	0(3)	1

Quarter 5

No.	Course	Cl.	Q.H.
IIS 1300	Probabilistic Analysis	4	4
ME 1301	Mech.	4	4
MTH 1224	Calculus V	4	4
ECN 1116	Economics II	4	4
PHY 1522	Physics Lab II	0(3)	1

Third Year

Quarter 6

No.	Course	Cl.	Q.H.
IIS 1330	Prin. of Comp. and Prog. I	4	4
ECE 1171	Elec. Engr. I	4	4
	Math Elective	4	4
IIS 1310	Statistics I	4	4

Quarter 7

No.	Course	Cl.	Q.H.
IIS 1320	Statistics II	4	4
IIS 1340	Operations Res. I	4	4
IIS 1370	Indus. Cost Cont.	4	4

Fourth Year

Quarter 8

No.	Course	Cl.	Q.H.
IIS 1400	Systems I	4	4
IIS 1350	Dig. Sim. Tech.	4	4
IIS 1341	Operations Res. II	4	4
	Soc. Sci./Hum. Elective	4	4
SPC 1102	Effective Spkg.	3	3

Quarter 9

No.	Course	Cl.	Q.H.
IIS 1401	Systems II	4	4
IIS 1360	Engr. Econ. and Dec. Thry.	4	4
	Engr. Sci. Elect.	4	4
	Soc. Sci./Hum. Elective	4	4

Fifth Year

Quarter 10

No.	Course	Cl.	Q.H.
IIS 1480	People in Organizations	4	4
	Tech. Elective	4	4
	Tech. Elective	4	4
	Soc. Sci./Hum. Elective	4	4

Quarter 11

No.	Course	Cl.	Q.H.
	Tech. Elective	4	4
	Tech. Elective	4	4
	Open Elective	4	4
	Soc. Sci./Hum. Elective	4	4

The elective courses completed must have a combined total of at least twelve engineering science credits and two design credits.

Specimen Program in Mechanical Engineering

First Year

Quarter 1

No.	Course	Cl.	Q.H.
GE 1100	Comp. for Engr.*	4	4
MTH 1123	Calculus I	4	4
PHY 1221	Physics I	4	4
ENG 1111	Fresh. Engl. II*	4	4

Quarter 2

No.	Course	Cl.	Q.H.
GE 1110	Engr. Graph. and Des.*	4	4
MTH 1124	Calculus II	4	4
PHY 1222	Physics II	4	4
CHM 1131	Gen. Chem.*	4	4

Quarter 3

No.	Course	Cl.	Q.H.
MTH 1125	Calculus III	4	4
PHY 1223	Physics III	4	4
ENG 1113	Gr. Th. Lit.*	4	4
CHM 1131	Gen. Chem.*	4	4

*First-year pattern of two-term courses may vary according to assigned section.

Second Year

Quarter 4

No.	Course	Cl.	Q.H.
ME 1301	Mech. I	4	4
MTH 1223	Calculus IV	4	4
PHY 1224	Physics IV	4	4
PHY 1521	Physics Lab I	0(3)	1
ECN 1115	Prin. and Prob. of Econ.	4	4

Quarter 5

No.	Course	Cl.	Q.H.
ME 1302	Mech. II	4	4
ME 1340	Therm. II	4	4
MTH 1224	Calculus V	4	4
PHY 1522	Physics Lab II	0(3)	1
	Soc. Sci./ Hum. Elective	4	4

Third Year

Quarter 6

No.	Course	Cl.	Q.H.
ME 1341	Therm. II	4	4
ME 1302	Mech. III	4	4
ME 1390	Meas. and Analysis*	0(3)	4
MTH 1225	Math. Anal. I	4	4

Quarter 7

No.	Course	Cl.	Q.H.
ME 1370	Fluid Mech. I	4	4
ME 1380	Materials Sci.*	4(3)	5
MTH 1226	Math. Analysis II	4	4
ME 1304	Mech. IV	4	4

*Given in Quarters 6 and 7.

Fourth Year

Quarter 8

No.	Course	Cl.	Q.H.
	Tech. Elective	4	4
	Tech. Elective	4	4
	Tech. Elective	4	4
	Soc. Sci./ Hum. Elec.	4	4

Quarter 9

No.	Course	Cl.	Q.H.
ME 1345	Heat Transfer I	4	4
ME 1305	Dynamics	4	4
	Tech. Elective	4	4
	Soc. Sci./ Hum. Elective	4	4

Fifth Year**Quarter 10****Quarter 11**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
	Tech. Elective	4	4		Tech. Elective	4	4
	Tech. Elective	4	4		Tech. Elective	4	4
	Tech. Elective	4	4		Tech. Elective	4	4
	Soc. Sci./				Soc. Sci./		
	Hum. Elec.	4	4		Hum. Elective	4	4

Elective requirements for the junior and senior years (B.S. in M.E.)

Juniors and seniors will select ten (10) technical and four (4) arts and sciences electives, subject to the following Department restrictions:

A. Arts and Sciences electives (four):

Must be selected from a Department-approved list of humanities and/or social science courses, which is available during preregistration.

B. Required technical electives:

1. ECE 1171 Electrical Engineering I (Fall, Winter)
2. ME 1480 Mechanical Behavior of Materials (Fall, Winter) or
ME 1483 Materials Processing (Spring, Summer)
- 3a. ME 1331 Mechanical Engineering Design (Prereq. ME 1330) (Fall, Winter) or
ME 1439 Engineering Design (Classes of 1983 and 1984)
- 3b. ME 1331 Mechanical Engineering Design (Prereq. ME 1330) and
ME 1332 Heat and Mass Transfer Design (Prereq. ME 1345) (Starts with class of 1985)

C. Additional technical electives:

The remaining technical electives should be chosen after consideration of your professional career objectives and must be approved by your adviser during preregistration in the Department. The major of these courses must be selected from the Mechanical Engineering elective course offerings. The student's area of concentration determines the recommended courses from which he or she is to choose electives.

Specimen B.S./M.S. Program in Mechanical Engineering

During the first two years of study, students enrolled in the B.S./M.E. Program in Mechanical Engineering pursue a curriculum similar to that of the regular M.E. Program.

Third Year**Quarter 6****Quarter 7**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
ME 1341	Therm. II	4	4	ME 1370	Fluid Mech.	4	4
ME 1302	Mech. III	4	4	ME 1380	Materials Sci.	4(3)	5
ME 1390	Meas. and			ME 1304	Mech. IV	4	4
	Analysis	2(3)	4	MTH 1226	Math Analysis	4	4
MTH 1225	Math Analysis	4	4		Soc. Sci./		
	Soc. Sci./				Hum. Elective	4	4
	Hum. Elective	4	4				

Fourth Year**Quarter 8****Quarter 9**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
	Tech. Elective	4	4	ME 1345	Heat Transfer I	4	4
	Tech. Elective	4	4	ME 1305	Dynamics	4	4
	Tech. Elective	4	4		Tech. Elective	4	4
	Soc. Sci./				Soc. Sci./		
	Hum. Elective	4	4		Hum. Elective	4	4
	Grad. Elective	2	2		Grad. Elective	2	2
ME 3101	Math Methods I	2	2	ME 3102	Math Methods II	2	2

Fifth Year**Quarter 10****Quarter 11****Quarter 12**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
	Grad. Elective	8	8		Grad. Elective	8	8		Thesis	6	6
	Tech. Elective	4	4		Tech. Elective	4	4		Tech. Elective	4	4
	Tech. Elective	4	4		Tech. Elective	4	4		Tech. Elective	4	4
	Seminar	1	1		Seminar	1	1		Grad. Elective	4	4
									Grad. Elective	4	4

Note: Technical elective requirements are the same as those for the regular Mechanical Engineering program.

The elective courses completed must have a combined total of at least four design credits and four and one-half engineering science credits.

Specimen Program in Computer Science**Third Year****Quarter 6****Quarter 7**

No.	Course	Q.H.	No.	Course	Q.H.
MTH 1301	Lin. Algebra	4	IIS 1300	Probability†	4
COM 1310	File Structures	4	COM 1335	Operating Sys.	4
ECE 1192	Comp. Org. & Des.	4		Coordinated Study	4
	Coordin. Study	4		Soc. Sci./Hum.	4

Fourth Year**Quarter 8****Quarter 9**

No.	Course	Q.H.	No.	Course	Q.H.
IIS 1310	Statistics I†	4	COM 1355	Compiler Des. I	4
COM 1358	Analysis of		COM 1390	Anal. of Algorithms	4
	Prog. Lang.	4		Coordinated Study	4
COM 1350	Automata and			Soc. Sci./Hum.	4
	Format Lang.	4			
	Soc. Sci./Hum.	4			

Fifth Year**Quarter 10****Quarter 11**

No.	Course	Q.H.	No.	Course	Q.H.
	Comp. Sci. Elect.‡	4		Coordinated Study	4
	Coordin. Study	4		Coordinated Study	4
	Coordin. Study	4		Soc. Sci./Hum.	4
COM 1600	Comp. Sci. Proj.	4	COM 1620	Comp. Sci. Sem.	4

†Students interested in the theoretical aspects of computer science should substitute MTH 1387 and MTH 1390.

‡COM 1410 Artificial Intelligence, COM 1370 Computer Graphics, or COM 1315 Data Base Management I.

Lincoln College

Specimen Program in Electrical Engineering Technology

First Year

Quarter 1

No.	Course	Cl.	Q.H.
MTH 1191	Col. Alg. and Trig. I	4	4
PHY 1191	Physics I	4	4
ENG 1110	Fresh. Engl. I	4	4
GET 1170	Graphics I	4	4

Quarter 1

No.	Course	Cl.	Q.H.
MTH 1192	Col. Alg. and Trig. II	4	4
PHY 1192	Physics II	4	4
ENG 1111	Fresh. Engl. II	4	4
GET 1100	Comp. Prog.	4	4
PHY 1194	Physics Lab I	2	2
CT 1105	Intro. Prog.	4	4

Quarter 3

No.	Course	Cl.	Q.H.
MTH 1193	Calculus I	4	4
PHY 1193	Physics III	4	4
ENG 1114	Prof. Writing	4	4
GET 1171	Graphics II	4	4
PHY 1195	Physics Lab II	2	2
CT 1341	Basic Comp. Org.	4	4

Second Year

Quarter 4

No.	Course	Cl.	Q.H.
MTH 1194	Calculus A	4	4
EET 1151	Circ. Analysis II	4	4
ECN 1115	Economics	4	4
	Soc. Sci.	4	4

Quarter 5

No.	Course	Cl.	Q.H.
MTH 1195	Calculus B	4	4
EET 1152	Circ. Analysis II	4	4
MET 1319	Mechanics	4	4
	Soc. Sci.	4	4
EET 1324	Cir. Lab. I	2	2

Third Year

Quarter 6

No.	Course	Cl.	Q.H.
EET 1360	Eng. Analysis I	4	4
EET 1353	Circ. Analysis III	4	4
EET 1311	Electronics I	4	4
EET 1325	Circ. Lab II	2	2
EET 1330	Energy Conv.	4	4

Quarter 7

No.	Course	Cl.	Q.H.
EET 1354	Circ. Analysis IV	4	4
EET 1312	Electronics II	4	4
EET 1310	Electrical Meas.	4	4
EET 1323	Electronic Lab	4	4

Fourth Year

Quarter 8

No.	Course	Cl.	Q.H.
EET 1313	Electronics III	4	4
EET 1327	Adv. Electronic Lab I	2	2
	Tech. Elective	4	4
	Soc. Sci.	4	4

Quarter 9

No.	Course	Cl.	Q.H.
EET 1328	Adv. Electronic Lab II	2	2
	Tech. Elective	4	4
EET 1314	Pulse & Dig. I	4	4
	Soc. Sci.	4	4
EET 1337	Dist. Syst.	4	4

Fifth Year

Quarter 10

No.	Course	Cl.	Q.H.
EET 1329	Adv. Electronic Lab II	2	2
	Tech. Elective	4	4
EET 1377	Cont. Sys. I	4	4
EET 1370	Dig. Comp. I	4	4

Quarter 11

No.	Course	Cl.	Q.H.
	Tech. Elective	4	4
EET 1378	Cont. Sys. II	4	4
EET 1371	Dig. Comp. II	4	4
	Soc. Sci.	4	4

Technical Elective Sequences

(A) Power Systems Sequence

No.	Course	Q.H.
EET 1362	Bas. Pwr. Sys. I	4
EET 1363	Bas. Pwr. Sys. II	4
EET 1364	Bas. Pwr. Sys. III	4
	Tech. Elective	4

(B) Communications Engineering Sequence

No.	Course	Q.H.
EET 1317	Prin. of Com. Sys I	4
EET 1318	Prin. of Com. Sys II	4
EET 1319	Prin. of Com. Sys III	4
	Tech. Elective	4

Specimen Program in Mechanical Engineering Technology

First Year

Quarter 1				Quarter 2				Quarter 3			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
MTH 1191	Col. Alg. and Trig. I	4	4	MTH 1192	Col. Alg. and Trig II	4	4	MTH 1193	Calculus I	4	4
ENG 1110	Fresh Eng. I	4	4	ENG 1111	Fresh. Eng. II	4	4	ENG 1114	Lit. of Engineering	4	4
GET 1170	Engineering Graphics I or			GET 1100	Prin. of Comp. Prog. 1 or			GET 1171	Engineering Graphics II	4	4
GET 1100	Prin. of Comp. Prog. 1	4	4	GET 1170	Engineering Graphics I	4	4				

Second Year

Quarter 4				Quarter 5			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
MTH 1194	Calculus A	4	4	MTH 1195	Calculus B	4	4
MET 1301	Mechanics A	4		MET 1302	Mechanics B	4	4
EET 1320	Electricity & Electronics	4	4	MET 1314	Stress Anal.	4	4
CT 1364	Eng. Des. Gr.	4	4		A. & S. Elective I	4	4

Third Year

Quarter 6				Quarter 7			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
MET 1315	Stress Anal. B	4	4	MET 1380	Materials A	4	4
MET 1390	Meas. & Anal. Lab	2	2	MET 1391	Technol. Lab A	2	2
MET 1340	Thermodynamics A	4	4	MET 1341	Thermodynamics B	4	4
MET 1303	Mechanics C	4	4	MET 1370	Fluid Mech. A	4	4
ECN 1115	Econ. Prin. & Probs.	4	4				

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
MET 1330	Mech. Design A	4	4
MET 1392	Tech. Lab B	2	2
MET 1371	Fluid Mechanics B	4	4
MET 1396	Machine Shop (Indus. Engr. Elec. on petition with experience) A. & S. Elec.	4 4 4 4	4 4 4 4

Quarter 9

No.	Course	Cl.	Q.H.
MET 1331	Mech. Design B	4	4
MET 1393	Tech. Lab C	2	2
MET 1342	Refrig. & Air Cond.	4	4
	A. & S. Elective I	4	4

Fifth Year**Quarter 10**

No.	Course	Cl.	Q.H.
MET 1394	Tech. Lab. D	2	2
EET 1360	Engr. Economy A. & S. Elec. I	4 4	4 4
	Tech. Elec. I	4	4
MET 1481	Materials B or or	4	4
MET 1416	Stress Anal. C	4	4

Quarter 11

No.	Course	Cl.	Q.H.
MET 1395	Tech. Lab E	2	2
MET 1343	Heat Transfer	4	4
	Tech. Elec. I	4	4
	A. & S. Elec. I	4	4

No.	Course	Cl.	Q.H.
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Technical electives must be chosen from the following list:

MET 1416	Stress Analysis C	4	
MET 1415	Exp. Stress Analysis	4	
MET 1414	Mech. Vibrations	4	
MET 1481	Materials B	4	
MET 1482	App. Metallurgy	4	
MET 1444	Power Gen.	4	
MTH 1196	Differential Equations	4	
EET 1321	Electricity and Electronics	4	
EET 1390	Optical instrumentation	4	
CHT 1381	Nuclear Technology	4	

Specimen Program in Computer Technology**First Year****Quarter 1**

No	Course	Q.H.
MTH 1191	Alg. & Trig. I	4
PHY 1191	Physics I	4
ENG 1110	Fresh. Eng. I	4
GET 1170	Eng. Graph I	4
		16

Quarter 2

No.	Course	Q.H.
MTH 1192	Alg. & Trig. II	4
PHY 1192	Physics II	4
ENG 1111	Fresh. Eng. II	4
CT 1105	Intro. to Prog.	4
PHY 1194	Physics Lab I	2
		18

Quarter 3

No.	Course	Q.H.
MTH 1193	Calculus I	4
PHY 1193	Physics III	4
ENG 1114	Lit. of Engineering	4
CT 1341	Basic Comp. Organ	4
PHY 1195	Physics Lab II	2
		18

Second Year**Quarter 4**

No.	Course	Q.H.
MTH 1194	Calculus A	4
EET 1151	Circuits Anal. I	4
ECN 1115	Economics I	4
CT 1310	FORTRAN	4
		16

Quarter 5

No.	Course	Q.H.
MTH 1195	Calculus B	4
EET 1152	Circuits Anal. II	4
CT 1368	Semiconductor Logic	4
	SS/HUM	4
		16

Third Year**Quarter 6**

No.	Course	Q.H.
EET 1311	Electronics I	4
CT 1340	Mod Prog. Tech.	4
CT 1369	Computer Logic	4
CT 1320	COBOL	4
		16

Quarter 7

No.	Course	Q.H.
CT 1345	Assembly Lang.	4
CT 1374	Intro. to CPU Hdwre.	4
CT 1342	Adv. Comp. Organ	4
	SS/HUM	4
		16

Fourth Year**Quarter 8**

No.	Course	Q.H.
CT 1375	CPU Hdwre Arch.	4
CT 1330	Non-num. Algo.	4
CT	Comp. Tech. Elective	4
	SS/HUM	4
		16

Quarter 9

No.	Course	Q.H.
CT 1355	Micro-Peri. Hdwre.	4
CT 1335	Num. Algorithms	4
CT 1380	Data Comm. Methods	4
CT	Comp. Tec. Elective	4
		16

Fifth Year**Quarter 10**

No.	Course	Q.H.
CT	Comp. Tech. Elective	4
CT 1360	Ind. Software	4
	Tech. Elective	4
	SS/HUM	4
		16

Quarter 11

No.	Course	Q.H.
CT 1365	Ind. Hdwre.	4
CT 1356	Comp. Peri. Hdwre.	4
	SS/HUM	4
	Technical Elect.	4
		16

College of Nursing

Specimen Program for Baccalaureate Degree in Nursing

First Year**Quarter 1**

No.	Course	Cl.	L.	Q.H.
BIO 1140	Bas. Ani. Bio. I	3	4	4
HST 1101	Western Civ.	3		4
ENG 1110	Fresh Eng. I	4		4
NUR 1100	Nursing	4		4

Quarter 2

No.	Course	Cl.	L.	Q.H.
CHM 1111	Gen. Chem.	4	3	5
BIO 1141	Bas. Ani. Bio. II	3	4	4
ENG 1111	Fresh. Eng. II	4		4
NUR 1101	Nursing	4		4

Quarter 3

No.	Course	Cl.	L.	Q.H.
CHM 1112	Gen. Chem.	4	3	5
BIO 1295	Hum. Anat.	3	3	4
HST 1102	Western Civ. II	4		4
NUR 1102	Nursing	4		4

Second Year**Quarter 4**

No.	Course	Cl.	L.	Q.H.
BIO 1120	Bas. Microbio.	3	4	4
BIO 1150	Hum. Physiol.	3	3	4
PSY 1111	Fnd. Psych.	4		4
NUR 1200	Nursing	4	6	6

Quarter 5

No.	Course	Cl.	L.	Q.H.
BIO 1253	Hum. Physiol. I	3	3	4
PSY 1112	Fnd. Psych. I	4		4
SOA 1100	Soc. Anthro	4		4
NUR 1201	Nursing	3	6	6

Third Year**Quarter 6**

No.	Course	Cl.	L.	Q.H.
Section I				
PSY 1241	G and D I	4		4
PSY 1271	Soc. Psych.	4		4
NUR 1301	Psych. Nursing	4	9	7

Quarter 7

No.	Course	Cl.	L.	Q.H.
Section I				
PSY 1242	G and D II	4		4
SOC 1100	Sociology	4		4
PCL 1305	Pharmac.	3		3
NUR 1300	Nursing	3	6	7

No.	Course	Cl.	L.	Q.H.
Section II				
PSY 1241	G and D I	4		4
PCL 1305	Pharmacol.			3
SOC 1100	Sociology	4		4
NUR 1300	Nursing	5	6	7

No.	Course	Cl.	L.	Q.H.
Section II				
PSY 1242	G and D II	4		4
PSY 1271	Soc. Psych.	4		4
NUR 1301	Psych. Nurs.	4	9	7

Fourth Year**Quarter 8**

No.	Course	Cl.	L.	Q.H.
NUR 1400	Mat. Child. Nur.*	4	15	9
	Hum. Elective	4		4
	Gen. Elective	4		4

Quarter 9

No.	Course	Cl.	L.	Q.H.
NUR 1401	Med. Surg.			
	Nursing*	4	15	9
	Hum. Elective	4		4
	Gen. Elective	4		4

Fifth Year**Quarter 10**

No.	Course	Cl.	L.	Q.H.
NUR 1500	Com. Hlth. Nur.	4	12	9
	Elective	4		4
	Elective	4		4

Quarter 11

No.	Course	Cl.	L.	Q.H.
NUR 1501	Contemp. Nur.	4	3	5
	Elective	(4)		(4)
	(if desired)			
NUR 1502	Intro. Nur. Res.	4		4

* Each of these courses is offered in Quarters 8 and 9, but only one is to be taken per quarter.

179 Q.H. = Minimum graduation requirement.

Degrees

The College of Nursing offers a five-year program leading to the Bachelor of Science degree in Nursing, and Registered Nurse day and evening programs leading to the Bachelor of Science degree in Nursing. The length of these programs varies, depending on the individual's interest and ability to achieve advanced placement.

Quantitative Requirements

Candidates for the Bachelor of Science degree must successfully complete all of the prescribed courses in the applicable curriculum. For the Bachelor of Science degree this totals 179 quarter hours. The prescribed periods of cooperative work at health agencies associated with the University are not required of the Bachelor of Science Programs for Registered Nurses.

College of Pharmacy and Allied Health Professions

Specimen Program in Pharmacy (Five-Year Cooperative)

First Year

Quarter 1					Quarter 2					Quarter 3				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
	Electives			8	BIO 1106	Gen. Bio.	3	4	4	CHM 1122	Gen. Chem. †	4	3	5
MTH 1106	Fund. Math.*	4		4	MTH 1107	Funct. and Bas. Cal.*	4		4	BIO 1107	Ani. Bio.	3	4	4
MTH 1107	Funct. and Bas. Cal.*	4		4	MTH 1108	Calculus*	4		4	ENG 1111	Fresh. Eng. II	4		4
CHM 1111	Gen. Chem.	4	3	5	ENG 1110	Fresh. Eng. I	4		4		Elective	4		4
					PAH 1135	Prof. Dynamics in Health Care Deliv. Svs.	4		4					

*Minimum math requirement: MTH 1108.

†CHM 1151, CHM 1152, General Chemistry, may be taken in place of CHM 1122, but one year of high school calculus is recommended.

Second Year

Quarter 4 (Entire Class) (Sept.-Dec.)					Quarter 4A (Entire Class) (Jan.-March)					Quarter 5 (April-June & June-Sept.)				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
PHY 1201	Physics I	4		4	PHY 1203	Physics III	4		4	PAH 1202	Anat. &			
CHM 1264	Organic Chem.	4	(3)	5	CHM 1265	Organic Chem.	4	(3)	5		Physiology I	4	(3)	5
SOC 1135	Soc. Psych. ‡	4		4		A. & S.				PAH 1280	Bio. Chem.	5		5
	A. & S. Elective			4		Electives	8		8		A. & S.			
	or										Electives	8		8
PCT 1230	Basic Pharm.	3		3	SOC 1135	Soc. Psyc.	4		4					
					PCT 1230	Basic Pharm.	3		3					

‡SOC 1135 may be taken during any quarter of the second year.

Third Year

Quarter 6					Quarter 7				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
PCT 1340	Pharmaceutics	4		4	PCT 1350	Pharmaceutics	5		5
PMC 1420	Anti-infectives				PCL 1410	Pathology	4		4
	Struc. & Action	5		5	PCL 1450	Pharmacol.			
PAH 1204	Anat. &					Lab. I	0	(3)	1
	Phys. II	4	(3)	5	PCT 1320	Pharmaceu. L.	1	(3)	2
PMC 1418	Med. Chem./				PCL 1420	Pharmacol.			
	Pharmacol. I	4		4		Med./Chem. II	6		6

Fourth Year

Quarter 8					Quarter 9 (Entire Class) (April-June)				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
PCL 1422	Pharmacol. Med./Chem. III	6		6	TOX 1300	Toxicology	4		4
PCT 1440	Bioph./P'kin.	4		4	PHP 1601	Non-Prescription Medication	4		4
PCL 1452	Pharmacol. Lab. II	0	(3)	1	PHP 1602	Clin. Pharmacotherapeutics	5		5
PCL 1320	Drug Analysis	4	(3)	5	PCT 1441	Pharmacokinetic Prin. in Drug Therapy	4		4

Fifth Year**Quarter 10**
(Summer)**Quarter 11**
(Fall)

No.	Course	Q.H.	No.	Course	Q.H.
PHP 1502	Clin. Pharm. Clerkship	15	PHP 1502	Clin. Pharm. Clerkship	15
PHP 1501	Pharm. Externship	4	PHP 1501	Pharm. Externship	4
PHP 1402	Parapharmaceuticals	2	PHP 1306	Community Pharm. Mgt.	4
PHP 1503	Prof. Practice Lab	1		or	
PHP 1302	Pharm. Admin.	4	PHP 1305	Hospital Pharm.	
PHP 1303	Interper. Skills for			Mgmt.	4
	Health Professionals	4	PHP 1304	Caring for Patients:	
PHP 1401	Drug Info. and			Psychosocial Aspects	
	Eval.	3		of Illness	4
	Prof. Elective	4		Prof Elective	4
		18			16

Quarter 12
(Winter)**Quarter 13**
(Spring)

No.	Course	Q.H.	No.	Course	Q.H.
PHP 1502	Clin. Pharm. Clerkship	15	PHP 1502	Clin. Pharm. Clerkship	15
PHP 1501	Pharm. Externship	4	PHP 1501	Pharm. Externship	4
PHP 1402	Parapharmaceuticals	2	PHP 1301	Pharm. Jurisprudence	4
PHP 1503	Prof. Practice Lab	1	PHP 1306	Community Pharm. Mgt.	4
PHP 1302	Pharm. Admin.	4		or	
PHP 1303	Interper. Skills for		PHP 1305	Hospital Pharm.	
	Health Professionals	4		Mgt.	4
PHP 1401	Drug Info. and		PHP 1304	Caring for Patients:	
	Eval.	3		Psychosocial Aspects	
				of Illness	4
	Prof. Elective	4		Prof. Elective	4
		18			16

NOTES: About one quarter of the class will be in PHP 1502, one quarter in PHP 1501, and one half in the classroom for each quarter. Students must take a total of 8 credits for professional electives. All 8 credits may be taken in one quarter or as outlined above.

Specimen Program in Dental Hygiene***First Year****Quarter 1****Quarter 2****Quarter 3**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
CHM 1101	Gen. Chem.	3	(3)	4	CHM 1102	Gen. Chem.	3	(3)	4	BIO 1190	Bas. Microbio.	3	(4)	4
BIO 1175	Human Anat. & Physiology I Prof. Courses	4	(3)	5	BIO 1176	Human Anat. & Physiology II Prof. Courses	4	(3)	5		Prof. Courses		(4)	

Second Year**Quarter 4****Quarter 4A****Quarter 5**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
ENG 1110	Fresh. Eng. I Prof. Courses	4	4	PSY 1111	Fnd. Psych. I Prof. Courses	4	4	SOC 1100	Intro. Soc.	4	4
								ENG 1111	Fresh. Eng. II Prof. Courses	4	4

*Students are admitted directly to the Forsyth School for Dental Hygienists and should contact the School for catalogs, applications, and complete program information by writing to:

Forsyth School for Dental Hygienists
140 The Fenway
Boston, Massachusetts 02115*

Specimen Program in Medical Laboratory Science

(Five-Year Cooperative)

First Year

Quarter 1					Quarter 2					Quarter 3				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
MTH 1106	Fund. Math. <i>or</i>				MTH 1107	Func. Calculus <i>or</i>				ENG 1111	Fresh. Engl. II	4		4
MTH 1107	Func. Calculus	4		4	MTH 1108	Calculus	4		4	MLS 1111	Basic MLS I	2	(3)	3
CHM 1111	Gen. Chem. I	4	(3)	5	CHM 1122	Gen. Chem. II	4	(3)	5	CHM 1221	Analyt. Chem.	3	(3)	4
BIO 1130	Gen. Bio.	3	(3)	4	BIO 1131	Anim. Bio.	3	(4)	4		Elective	4		4
ENG 1110	Fresh. Engl. I	4		4	PAH 1135	Prof. Dyn.	4		4		Elective	4		4
MLS 1101	Med. Lab. Orien. I	1		1										

Second Year

Quarter 4 Entire Class*					Quarter 4A Entire Class*					Quarter 5*				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
CHM 1264	Org. Chem. I	4	(3)	5	MLS 1331	Clin. Immunol.	2	(3)	3	CHM 1265	Org. Chem. II	4	(3)	5
BIO 1293	Humn. Physio. I	3	(3)	4	MLS 1121	Hematology I	2	(3)	3	BIO 1294	Humn. Phys. II	3	(3)	4
MLS 1141	Microbiology	4	(6)	6	MLS 1122	Hematology II	2	(3)	3	MLS 1151	Clin. Chem.	4	(3)	5
	Elective	4		4	MLS 1332	Immunohem.	2	(3)	3		Elective	4		4
						Elective	4		4					

*Depending on group assignment, this is a sample of the second year.

*MLT applies for Clinical.

*Regular co-op sequence starts here.

Third Year

Quarter 6*					Quarter 7				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
BIO 1235	Genetics	3	(4)	4	PHY 1202	Physics II	4		4
PHY 1201	Physics I	4		4	BIO 1236	Cell. Phys. Bio.	3	(4)	4
PHY 1501	Physics Lab		(3)	1	BIO 1291	Gen. Micro.	3		3
MLS 1642	Parasitology	2	(3)	3	MLS 1643	Clin. Mycology	2	(3)	3
	Elective	4		4	PHY 1502	Physics Lab		(3)	1
						Elective	4		4

*M.T. applies for Clinical.

Fourth Year

Quarter 8					Quarter 9				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
MLS 1645	Clin Micro II <i>and</i>	2		2	MLS 1523	Hematology AS	(20)		4
MLS 1651	Clin Chem II <i>and</i>	2		2		<i>and</i>			
MLS 1621	Hematology III <i>or</i>	3		3	MLS 1532	Immunohem AS <i>or</i>	(12)		3
MLS 1646	Clin Micro III <i>and</i>	2		2	MLS 1544	Clin. Micro. AS <i>or</i>	(32)		7
MLS 1652	Clin Chem III <i>and</i>	2		2	MLS 1552	Clin. Chem. AS	(32)		7
MLS 1631	Immunohematol.	2		2	MLS 1622	Hematology IV	2		2
MLS 1523	Hematology AS		(20)	4	MLS 1647	Clin. Micro. IV	2		2
	<i>and</i>				MLS 1653	Clin. Chem. IV	2		2
MLS 1532	Immunohem. AS <i>or</i>	(12)		3	MLS 1680	MLS Special			
MLS 1544	Clin. Micro. AS <i>or</i>	(32)		7		Topics	2		2
MLS 1552	Clin. Chem. AS		(32)	7					

Fifth Year**Quarter 10****Quarter 11**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
MLS 1523	Hematology AS <i>and</i>		(20)		MLS 1681	MLS Sen. Sem.	2		2
MLS 1532	Immunohem AS <i>or</i>	(12)		3	MLS 1665	Med Lab Mgmt	2		2
MLS 1544	Clin Micro AS <i>or</i>	(32)		7	MLS 1661	Hlth. Sci. Ed.	2		2
MLS 1552	Clin. Chem. AS	(32)		7		Prof. Elective	2-4		2-4
MLS 1646	Clin. Micro. III <i>and</i>	2		2		Elective	4		4
MLS 1631	Immunohematol.	2		2					
	<i>and</i>								
MLS 1652	Clin. Chem. III <i>or</i>	2		2					
MLS 1645	Clin. Micro. II <i>and</i>	2		2					
MLS 1651	Clin Chem II <i>and</i>	2		2					
MLS 1621	Hematology	3		3					

Elective Distribution Requirements

12 QH of Humanities.

8 QH of Social Sciences and 4 QH of Professional Dynamics; or 12 QH Social Sciences.

14-16 QH of other electives including at least one Professional Elective.

Specimen Program in Health Record Administration (Five-Year Cooperative)

First Year**Quarter 1****Quarter 2****Quarter 3**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
MTH 1101	Bas. Math	4		4	MTH 1103	Bas. Math	4		4	BIO 1121	Intro. Microbio.	3		3
BIO 1106	Gen. Bio.	3	(3)	4	BIO 1107	Anim. Bio.	3	(4)	4	PSY 1112	Fnd. Psych. II	4		4
PSY 1111	Fnd. Psych. I			4	POL 1110	Intro. Pol. <i>or</i>	4		4	ENG 1111	Fresh. Eng. II	4		4
ENG 1110	Fresh. Eng. I	4		4		Modern Lang.	4		4	POL 1111	Intro. Amer. Gov.	4		4
HRA 1100	Orient. Med. Rec. I	1		1	PAH 1135	Dynam. of Hlth. Care					<i>or</i> Modern Lang.	4		4

Second Year**Quarter 4****Quarter 5**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
BIO 1150	Func Hum Anat I	4	(3)	5	MTH 1150	Prob. Stat. & Computer	4		4
SOC 1100	Intro. Socio	4		4	BIO 1151	Func Hum Anat	4	(3)	5
HST 1101	West. Civ. <i>or</i>	4		4	HST 1102	West. Civ. <i>or</i>	4		4
ECN 1115	Prin. & Prob of Econ.	4		4	ECN 1116	Prin. & Prob.	4		4
HRA 1101	Orient Med Rec II	1		1		Econ. <i>or</i>			
	Elective	4		4	ECN 1130	Med. Econ.	4		4
					HRM 1432	OB I	4		4

Third Year**Quarter 6****Quarter 7**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
HRA 1310	Hosp. Law	2		2	HRA 1340	Fnd. Med. Sci. II	3		3
HRA 1320	Med. Term.	4		4	HRA 1420	Hlth. Rec. Sci. II	3	(3)	4
HRA 1330	Fnd. Med. Sci. I	3		3	HRA 1610	Intro. DP for Hlth. Sci.	4		4
HRA 1410	Hlth. Rec. Sci. I	3	(3)	4		Mngt. Prin.			
	Commun.	4		4		Hlth. Care	4		4
						Elective	4		4

Fourth Year**Quarter 8**

No.	Course	Cl.	L.	Q.H.
HRA 1430	Hlth. Rec. Sci. III	3	(3)	4
HRA 1630	Appl. Hlth. Stat.	4		4
HRA 1480	Clin. Sem. (15 days)	2		2
HRA 1450	Appl. Hlth. Rec. Dir. Pract. I	3		3
HRA 1510	Org. & Mngt. Med. Rec. Dp. I	4		4

Quarter 9

No.	Course	Cl.	L.	Q.H.
HRA 1440	Hlth. Rec. Sci. IV	3	(3)	4
HRA 1540	Qual. Assur.	4		4
HRA 1620	Sys. Anal.	4		4
HRA 1460	Appl. Hlth. Rec. Dir. Pract. II (7 dys)	2		2
HRA 1520	Org. & Mngt. Med. Rec. Dp. II	4		4

Fifth Year**Quarter 10**

No.	Course	Cl.	L.	Q.H.
HRA 1640	Med. Comp. Appl.	4		4
HRA 1530	Org. & Mngt. Med. Red. Dp. III	4		4
MLS 1661	Hlth. Sci. Ed. Elective	2		2
		4		4

Quarter 11

No.	Course	Cl.	L.	Q.H.
HRA 1560	Sem. Hlth. Rec.	2		2
HRA 1570	Hlth. Rec. Prof.	2		2
HRA 1800	Indep. Study	4		4
HRA 1470	Appl. Hlth. Rec. Sci. III	4		4
HRA 1810	Spec. Topics I*			2
HRA 1820	Spec. Topics II*			2

* Assigned by Program Director

**Specimen Program in Respiratory Therapy B.S.
(Five-Year Cooperative)****First Year****Quarter 1**

No.	Course	Cl.	L.	Q.H.
MTH 1106	Fund. Math.	4		4
CHM 1111	Gen. Chem.	4	(3)	5
BIO 1140	Bas. Ani. Bio.	3	(3)	4
ENG 1110	Fresh. Engl. II	4		4
RTH 1111	Resp. Ther. Sem. I	1		1

Quarter 2

No.	Course	Cl.	L.	Q.H.
MTH 1107	Func. and Bas. Calc.	4		4
BIO 1141	Bas. Ani. Bio. II	3	(4)	4
PHY 1209	Bas. Physics	3		4
HRA 1321	Bas. Med. Term.	2		2
RTH 1112	Resp. Ther. Sem. II	1		1
PAH 1135	Prof. Dynamics in the Hlth. Care Delivery Sys.	4		4

Quarter 3

No.	Course	Cl.	L.	Q.H.
ENG 1111	Fresh. Engl. II	4		4
CHM 1122	Gen. Chem.	4	(3)	5
BIO 1121	Microbio.	3	(4)	4
RTH 1113	Resp. Ther. Sem. III A. & S. Elective	1		1
				4

Second Year**Quarter 4**

No.	Course	Cl.	L.	Q.H.
PAH 1202	Anat. Physiol. I	4	(3)	5
RTH 1301	Prof. Prac. Lab I		(3)	1
RTH 1331	Intro. Patient Care	4		4
RTH 1320	Cardio. Pul. Phys. A. & S. Elective	4		4
				4

Quarter 4A

No.	Course	Cl.	L.	Q.H.
PCL 1309	Pharmacol./ Resp. Care	4		4
PAH 1204	Anat. Physiol. II		(3)	5
RTH 1302	Prof. Prac. Lab. II		(3)	1
RTH 1332	Intro. Resp. Care	4		4
RTH 1321	Cardio.-Pul. Dis.	4		4

Quarter 5

No.	Course	Cl.	L.	Q.H.
RTH 1403	Prof. Prac. Lab. III		(3)	1
RTH 1414	Clin. Sem. I	1		1
RTH 1433	Resp. Care/ Med. Surg.	4		4
HRA 1330	Fund. Med. Sci. I	3		3
RTH 1411	Clin. Prac. I		(24)	6

Third Year**Quarter 6**

No.	Course	Cl.	L.	Q.H.
HRA 1310	Hosp. Law	2		2
RTH 1404	Prof. Prac. Lab. IV		(3)	1
RTH 1412	Clin. Prac. II		(24)	6
RTH 1415	Clin. Sem. II	1		1
RTH 1434	Resp. Care Crit. Patient	4		4

Quarter 7**

No.	Course	Cl.	L.	Q.H.
RTH 1505	Cardio.-Pul. Lab. Prac.		(3)	1
RTH 1535	Cardio.-Pul. Tech.	4		4
RTH 1435	Pediatrics A. & S. Electives	2		2
				8

Fourth Year**Quarter 8**

No.	Course	Cl.	L.	Q.H.
CHM 1264	Organic Chem. I	4	(3)	5
RTH 1516	Adv. Resp. Thrpy. Sem. I	1		1
RTH 1571	Adv. Life Sup. Sys. I	4		4
RTH 1578	Adv. Med. Monit.	4		4

Quarter 9

No.	Course	Cl.	L.	Q.H.
CHM 1265	Organic Chem. II	4	(3)	5
RTH 1517	Adv. Clin. Sem. II	1		1
RTH 1574	Adv. Clin. Phys. Prof. Elective	4		4

Fifth Year**Quarter 10**

No.	Course	Cl.	L.	Q.H.
RTH 1518	Adv. Clin. Sem. III	1		1
RTH 1576	Neonatology	4		4
RTH 1801	Dir. Study			2
RTH 1511	Practicum Prof. Elective	(16)		4
		4		4

Quarter 11

No.	Course	Cl.	L.	Q.H.
RTH 1519	Adv. Clin. Sem. IV	1		1
RTH 1512	Practicum A. & S. Electives	(16)		4
RTH 1802	Dir. Study			8
				2

Specimen Program in Toxicology (Five-Year Cooperative)

First Year**Quarter 1**

No.	Course	Cl.	L.	Q.H.
MTH 1106	Math	4		4
	Elective	4		4
BIO 1106	Gen. Bio. I	2	(4)	4
ENG 1110	Fresh. Engl. I	4		4

Quarter 2

No.	Course	Cl.	L.	Q.H.
MTH 1107	Math	4		4
CHM 1111	Gen. Chem.	4	(3)	5
BIO 1107	Anim. Bio.	3	(4)	4
TOX 1100	Tox. Orient.	1		1
PAH 1135	Prof. Dynamics in Hlth. Care Delivery System	4		4

Quarter 3

No.	Course	Cl.	L.	Q.H.
MTH 1108	Calculus	4		4
ENG 1111	Fresh. Engl. II	4		4
	Elective	4		4
CHM 1122	Gen. Chem.	4	(3)	5

Second Year**Quarter 4**

No.	Course	Cl.	L.	Q.H.
PHY 1201	Physics	4		4
CHM 1264	Org. Chem.	4	(3)	5
PAH 1202	Anat. & Phys. I	4	(3)	5
	Elective	4		4

Quarter 4A (entire class)

No.	Course	Cl.	L.	Q.H.
PHY 1203	Physics	4		4
CHM 1265	Org. Chem.	4	(3)	5
PAH 1204	Anat. & Phys. II	5	(3)	5

Quarter 5

No.	Course	Cl.	L.	Q.H.
PAH 1280	Gen. Biochem.	5		5
MTH 1150	Prob. Stat.	4		4
CIV 1390	Sur. Env. Prob.			
	or Elective	4		4
	Elective	4		4

Third Year**Quarter 6**

No.	Course	Cl.	L.	Q.H.
BIO 1121	Microbio.	3	(4)	4
PMC 1418	Med. Chem.			
	Pharmacol. I	4		4
CIV 1390	Survey Env. Prob.			
	or Elective	4		4

Quarter 7

No.	Course	Cl.	L.	Q.H.
PCL 1420	Pharmacol.			
	Med. Chem. II	6		6
CHM 1461	Id. Org. Comp.	1	(6)	3
TOX 1300	Toxicology I	4		4
PCL 1450	Pharmacol. Lab		(3)	1
MTH 1150	Prob. Stat.	4		4

Fourth Year**Quarter 8**

No.	Course	Cl.	L.	Q.H.
PCL 1422	Pharmacol.			
	Med. Chem. III	6		6
PCL 1452	Pharmacol.			
	Lab. II	0	(3)	1
PMC 1320	Drug Analysis	4	(3)	5
TOX 1305	Tox. II	4	(3)	5
TOX 1321	Biochem. Tox.	1	(6)	3

Quarter 9

No.	Course	Cl.	L.	Q.H.
TOX 1801	Special Topics	4		4
MLS 1151	Basic MLS			
	Clin. Chem. &			
	Instru.	4	(3)	5
TOX 1300	Tox. I or			
	Elective	4		4
PCL 1410	Pathology	4		4

Fifth Year**Quarter 10**

No.	Course	Cl.	L.	Q.H.
TOX 1302	Tox. III	4		4
PCT 1440	Bio. Pharm./			
	Pharm.	4		4
CHM 1431	Inst. Analysis	3	(6)	5
	Elective	4		4

Quarter 11

No.	Course	Cl.	L.	Q.H.
HSL 1506	Comm. Health	4		4
	Elective	4-8		4-8
	Tox. Colloq.	3		3
AFR 1115	Epidemiology	4		4
PCL 1505	Drug Intrac.	4		4

University College

Alternative Freshman-Year Program

Business Track: One-Year Program

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
MTH 1000	Math. I*	4	MTH 1010	Math. II*	4	MTH 1113	Col. Math. Business	4
ENG 4013	Fund. of Eng. I*	4	HST 4110	Hist. of Civ. A	4	HST 4111	Hist. of Civ. B	4
CI 4001	Integ. Lang. Skills		ENG 4014	Fund. of Eng. II*	4	ECN 4601	Economics I	4
	Devel. I*	2	CI 4002	Integ. Lang. Skills		MGT 4105	Mgt. and Org. (Int.)	4
	Directed Elective**	4		Devel. II*	2		(or) Directed Elect.**	4
				(or) Directed Elect.**	2-4			

Criminal Justice, Education, or Arts and Sciences Track: One-Year Program

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
HST 4110	Hist. of Civ. A	4	SOC 4010	Prin. Soc. I	4	SOC 4011	Prin. Soc. II	4
ENG 4013	Fund. of Eng. I*	4	POL 4101	Intro. Pol. Sci. I	4	HST 4111	Hist. of Civ. B	4
CI 4001	Integ. Lang. Skills		ENG 4014	Fund. of Eng. II*	4		Elective**	4
	Devel. I*	2	CI 4002	Integ. Lang. Skills		POL 4102	Intro. Pol. Sci. II	
	Directed Elective**	4		Devel. II*	2			
				(or) Directed Elect.**	2-4			

*Compensatory course

**Eligible students choose Directed Electives in consultation with faculty advisers.

Health Science Track

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
MTH 1010	Math. II	4	CHM 4110	Pre-Chemistry	5	MTH 4106	Fund. of Math	4
ENG 4013	Fund. of Eng. I*	4	BIO 4103	Biology A	4	CHM 4111	General Chem. I	5
CI 4001	Integ. Lang. Skills		ENG 4014	Fund. of Eng. II*	4		Directed Elective	4
	Devel. I*	2	CI 4002	Integ. Lang. Skills				
				Devel. II*	2			

Quarter 4

No.	Course	Q.H.
MTH 4107	Functions and Basic Calculus	4
CHM 4112	General Chem. II	5
BIO 4104	Biology B	4
	Directed Elective	4

*English, Mathematics and Integrated Language Skills courses will vary depending on placement tests.

The Writing Center

Telephones: 437-2328 437-3086

The Writing Center offers one-to-one tutorial help in writing to all students and staff at Northeastern University. It will help students find a topic, organize and develop ideas, learn how to edit and proofread for problems in grammar, punctuation, and spelling. The Writing Center is open Monday through Friday from 9:00 a.m. to 4:00 p.m. To get help at the Writing Center, stop by room 102 Cahners to make an appointment.

SPECIAL NOTE

Classes at Northeastern University are scheduled in different modules.

In assessing quarter weights for courses, the following statement applies: *One quarter-hour of credit is equal to 50 minutes of instruction per week, plus two hours of preparation.*

The Scheduling Office (126 HA) maintains all quarter-hour weights for courses. In the event of error in any publication, the academic record will reflect the correct quarter hours applicable to any degree requirement.

Some course titles may change, but the course number remains the same. Be sure you do not register for a course you may have already taken.

Basic College Compensatory Programs for 1984-1985

The Basic College Compensatory Education Program continues generally to encompass five courses, each bearing four quarter hours of credit, which are to be offered in the sequences indicated below. Certain freshmen may be assigned to any one of these course sequences based on tests administered during orientation week.

Fall		Winter	
MTH 1000	Mathematical Preliminaries I	MTH 1010	Mathematical Preliminaries II
ENG 1013	Fundamentals of Writing I	ENG 1014	Fundamentals of Writing II
ED 1003	Reading/Study Skills		

Specifically, MTH 1000 and MTH 1010 are to precede both the MTH 1106, MTH 1107, and MTH 1108 (nonbusiness math) sequence and the MTH 1113, MTH 1114, and MSC 1199 (business math) sequence; ENG 1013 and ENG 1014 collectively replace ENG 1110 (standard Freshman Writing) and are to precede ENG 1111 (standard Introduction to Literature) and, in the case of Lincoln College, the ENG 1111-ENG 1381 (Literature of Engineering) sequence.

Schedule for Continuation of Compensatory Programming in the Basic Colleges for 1984-1985

These courses are approved or disapproved for credit, except where noted, by the faculties of the individual colleges and are, therefore, subject to change.

	ENG 1013* Writing I	ENG 1014* Writing II	MTH 1000* Math Prelim. I	MTH 1010* Math Prelim. II	ED 1003 Read. Study Skills
Arts and Sciences	accepted	accepted	accepted	accepted	accepted
B-B Phys. Ther.	not accepted	not accepted	not accepted	not accepted	not accepted
Phys. Educ.	accepted	accepted	accepted	accepted	accepted
Rec. and Leis. Stud.	accepted	accepted	not accepted	not accepted	not accepted
Health Educ.	accepted	accepted	accepted	accepted	accepted
Bus. Admin.	accepted	accepted	accepted	accepted	not accepted
Crim. Justice	accepted	accepted	accepted†	accepted†	accepted
Education	accepted	accepted	accepted	accepted	accepted
Engineering‡	not applicable	not applicable	not applicable	not applicable	not applicable
Lincoln College	accepted	accepted	not applicable	not applicable	not accepted
Nursing B. S.	accepted	accepted	not accepted	not accepted	not accepted
Pharmacy and Allied Health Prof.	accepted§ w/o credit	accepted	not accepted	not accepted	not accepted
Computer Science	not applicable	not applicable	not applicable	not applicable	not applicable

* Graded pass/fail and therefore not included in the student's quality-point average.

† Freshmen in the College of Criminal Justice are not required to take a mathematics course in the freshman year. They can elect, however, to take MTH 1000 or MTH 1010 to prepare themselves for Fundamentals of Mathematics MTH 1106 as upperclassmen.

‡ Although the Colleges of Engineering and Computer Science do not allow MTH 1000 or MTH 1010 to be taken for academic credit, they do offer a special course sequence in college calculus with algebra and trigonometry (MTH 1120 and MTH 1121) for engineering freshmen judged to have deficiencies in mathematics. The courses involve extra hours of work but cover the same material as the regular freshman calculus sequence in the College of Engineering.

§ Although the College of Pharmacy and Allied Health professions does allow ENG 1013 to appear on the permanent record, it will only allow ENG 1014 for credit. Students completing the ENG 1013-ENG 1014 sequence will have to make up the four-credit elective which was displaced by ENG 1013.

Chemical Engineering

The course descriptions listed under Chemical Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term. In addition to meeting course prerequisites, students are expected to take each chemical engineering course in the sequence shown on the specimen program sheet.

CHE 1201 Chemical Engineering Calculations I 4 Q.H.*

(Prereq. CHM 1132)

This course examines application of fundamental laws of mass and energy conservation to chemical and physical processes. In this course the primary emphasis is on material balances. A computational laboratory is included to aid students in improving facility in handling problems typical of the course.

CHE 1202 Chemical Engineering Calculations II 4 Q.H.

(Prereq. CHE 1201)

Emphasis in this course is on energy balances and the simultaneous application of mass and energy conservation laws. Problems selected from those typical of the chemical processing industries are considered.

CHE 1203 Polymer Science and Engineering 4 Q.H.

(Prereq. CHM 1261)

This course provides instruction in the nature of polymeric materials and their importance to the chemical industries and everyday life. Topics include polymer classification, composition, structure, physical properties, chemical properties, and methods of polymer synthesis.

CHE 1301 Chemical Engineering I 4 Q.H.

(Prereq. CHE 1202)

The important unit operations of chemical engineering — fluid mechanics, heat transfer, and evaporation — are examined.

CHE 1302 Chemical Engineering II 4 Q.H.

(Prereq. CHE 1301)

This course is a continuation of CHE 1301 to include mass transfer unit operations: distillation and gas absorption.

CHE 1401 Transport Phenomena I 4 Q.H.

(Prereq. CHE 1301)

The mechanisms of momentum transport in fluid-flow phenomena are described. Velocity distributions for Newtonian fluids in the laminar and turbulent flow regimes are derived and utilized in the analysis of elementary fluid-flow problems.

CHE 1402 Transport Phenomena II 4 Q.H.

(Prereq. CHE 1401 and CHE 1302)

Mass and heat transport by the mechanisms of molecular and bulk motion are described. A variety of elementary physical and chemical transport problems are analyzed in terms of these mechanisms.

CHE 1410 Experimental Methods I 4 Q.H.*

(Prereq. CHE 1302)

Experimental approach to solving chemical engineering problems and preparing reports to detail the results and their interpretations. Experiments illustrating the fundamental unit operations are performed.

CHE 1411 Experimental Methods II 4 Q.H.*

(Prereq. CHE 1410)

A continuation of CHE 1410, requiring more advanced experimentation and more sophisticated reports.

CHE 1420 Chemical Engineering Thermodynamics 4 Q.H.

(Prereq. CHE 1202)

Topics include the first law and its application to batch and flow systems, heat effects in chemical and physical processes, thermodynamic properties; the second law, entropy, physical and chemical equilibria; emphasis on the fundamental principles and mathematical relations and their application to the analysis and solution of a variety of engineering problems.

CHE 1421 Chemical Engineering Kinetics 4 Q.H.

(Prereq. CHE 1420)

Topics include fundamental theories of the rate of chemical change in homogeneous reacting systems; integral and differential analysis of kinetic data; design of batch and continuous-flow chemical reactors; introduction to heterogeneous reactions and reactor design.

CHE 1501 Process Design I 6 Q.H.*

(Prereq. CHE 1402 and CHE 1420)

Process design of a chemical plant. Topics include process selection, material and energy balances, equipment selection and/or design, elements of instrumentation, flowsheets, and cost estimates.

CHE 1502 Process Design II 6 Q.H.*

(Prereq. CHE 1501)

This course is a continuation of CHE 1501. A more complex design is required. Additional elements of process design are studied.

CHE 1503 Projects I 6 Q.H.*

(Prereq. Senior standing and consent of Dept.)

This course offers individual research related to some phase of chemical engineering. Open only to students selected by the department head on the basis of scholarship and proven ability.

*Lab fee required.

CHE 1504 Projects II**6 Q.H.***

(Prereq. CHE 1503)

The course offers a continuation of the research work undertaken in CHE 1503.

CHE 1510 Principles of Nuclear Engineering**4 Q.H.**

(Prereq. Senior standing)

The course offers an introduction to the principles of nuclear engineering. Elements of nuclear physics, reactor physics, and radiation safety are presented, together with engineering techniques specific to the nuclear industry.

CHE 1511 Mathematical Methods in Chemical Engineering**4 Q.H.**

(Prereq. Senior standing)

The course examines formulation and solution of problems taken from chemical and engineering studies that require advanced mathematical methods. Emphasis is placed primarily on the formulation step, although numeric and analytic solution techniques for solving sets of algebraic equations and for solving ordinary and partial differential equations are discussed.

CHE 1512 Chemical Process Control**4 Q.H.**

(Prereq. Senior standing)

The course focuses on principles of automatic control with applications to chemical processing systems. Topics such as process modeling and control system design are included.

CHE 1513 Introduction to Optimization**4 Q.H.**

(Prereq. Senior standing)

Elementary optimization techniques, such as gradient methods, pattern search, linear programming, and dynamic programming, are described and applied to a variety of elementary physical and chemical problems.

CHE 1514 Special Topics**4 Q.H.**

(Prereq. Senior standing)

Chemical engineering topics of interest to the staff member conducting the class are presented for study.

CHE 1515 Chemical Energy Economics**4 Q.H.**

(Prereq. Senior standing)

Financial decision-making techniques are introduced and applied to the problems of production, transportation, and utilization of chemical energy resources such as petroleum, natural gas, coal, and shale oil.

CHE 1516 Mass Transfer Operations**4 Q.H.**

(Prereq. Senior standing)

Course focuses on calculation and design methods used in processes involving mass transfer. Topics covered include vapor-liquid equilibria for binary and multicomponent systems, multicomponent distillation, absorption, and extraction.

CHE 1517 Analysis of Chemical Processes**4 Q.H.**

(Prereq. CHE 1420, CHE 1421, and senior standing)

Course focuses on methods and reactions used for making chemical products on a large scale. Topics covered include types of physical and chemical equilibria, flow-sheet patterns, energy management, and catalytic and noncatalytic rate problems. A number of situations involving simultaneous application of the above topics in process analyses are studied.

CHE 1518 Management in the Chemical Industries**4 Q.H.**

(Prereq. Senior standing in engineering)

The course focuses on principles of management as applied to the chemical process industries. Case studies are used to supplement lectures and discussion.

CHE 1519 Kinetics of Polymerization Process**4 Q.H.**

(Prereq. CHE 1421, CHM 1262, and senior standing)

The course focuses on the mechanisms by which polymeric materials are assembled via chemical reaction. Reaction-rate models based on these mechanisms are utilized to investigate the effect of reaction parameters on the chemical and physical structure of the polymeric product. The specific polymerization processes considered are free radical addition, condensation, and ionic.

CHE 1520 Pollution Control in Chemical Industries**4 Q.H.**

(Prereq. Senior standing)

Students are instructed in fundamental operations for handling environmental problems in the chemical process industries. Water quality requirements and industrial waste characteristics are discussed.

CHE 1521 Chemical Process Development**4 Q.H.**

(Prereq. Senior standing)

The course offers a study of the manner in which a chemical process evolves from the research laboratory to full-scale production. Typical processes are used as illustrations. Topics covered include economic factors, safety factors, batch vs. continuous operation, process evaluation, developing the flow sheet, and scale-up considerations.

CHE 1522 Corrosion Engineering**4 Q.H.**

(Prereq. Senior standing)

The course covers the fundamentals of corrosion engineering: theories of corrosion, corrosion testing, corrosion protection, and selected relevant topics.

*Lab fee required.

Civil Engineering

The course descriptions listed under Civil Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

CIV 1210 Structural Mechanics I 4 Q.H. (Prereq. PHY 1222; MTH 1223 concurrently)

Topics normally include statics of particles and rigid bodies in two and three dimensions; analysis of internal forces in trusses and beams; centroids and centers of gravity of lines, area, and volumes; moments of inertia of areas and masses.

CIV 1211 Structural Mechanics II 4 Q.H. (Prereq. CIV 1210)

Course material includes analysis of stress and strain; mechanical properties of materials; elastic analysis of stresses and deformations of members subject to axial load, torsion, shear, and moment; introduction to column behavior.

CIV 1212 Structural Mechanics III 4 Q.H. (Prereq. CIV 1211)

Continuation of CIV 1211. Topics include torsion, general bending, curved members, shear flow, shear center, combined stresses including elastic and plastic behavior, continuation of column buckling, and introduction to yield and fracture criteria.

CIV 1220 Structural Analysis I 4 Q.H. (Prereq. CIV 1211)

Topics normally include review of reactions, shear and bending moment diagrams, bar forces in trusses, deflections by virtual work and moment area methods; and analysis of indeterminate structures by consistent deformations, slope deflection, and moment distribution.

CIV 1222 Structural Analysis II 4 Q.H. (Prereq. CIV 1220)

This course concentrates on matrix analysis of indeterminate structures using both flexibility and stiffness approaches; computer applications to analysis of framed structures.

CIV 1224 Structural Analysis III 4 Q.H. (Prereq. CIV 1220)

This course is a continuation of CIV 1220. Topics normally include slope deflection; moment distribution; effects of axial loads; symmetry; antisymmetry; nonprismatic members; influence lines for determinate and indeterminate structures, approximate methods of lateral load analysis and shear wall action.

CIV 1226 Structural Analysis & Design Lab 2 Q.H. (Prereq. CIV 1220 taken concurrently)

Course material includes lectures, experimental studies, computation laboratories, and computer projects to develop student's knowledge of structural behavior and understanding of the design and analysis of structures.

CIV 1240 Design of Reinforced Concrete Structures I 4 Q.H. (Prereq. CIV 1220)

Course material includes review of mechanical properties of steel and concrete; behavior and design of reinforced concrete beams for shear, moment, and bond; design of stocky columns for axial load and moment. Emphasis of course is on strength design.

CIV 1241 Design of Reinforced Concrete Structures II 4 Q.H. (Prereq. CIV 1240)

Topics normally include design of slender columns, foundations, multistory buildings with one-way and two-way floor systems.

CIV 1250 Design of Steel Structures I 4 Q.H. (Prereq. CIV 1220)

The course focuses on design of steel members subject to tension, compression, bending, and combinations of loading; design of connections, braced frames, and rigid frames.

CIV 1251 Design of Steel Structures II 4 Q.H. (Prereq. CIV 1250)

Topics normally include design of steel plate girders, composite construction in bridges and buildings, plastic analysis and design, and the design of high-rise buildings subject to lateral loads.

CIV 1310 Fluid Mechanics 4 Q.H. (Prereq. CIV 1210; MTH 1225 concurrently)

The course gives an introduction to both the statics and dynamics of fluid mechanics. Topics include properties of fluids; pressure variation in water and air; pressure force on surfaces and submerged bodies, continuity, momentum and energy principles; dimensional analysis and hydraulic similitude; flow in closed conduits, frictional and local losses in pipes; and simple pipe problems.

CIV 1320 Hydraulic Engineering 4 Q.H. (Prereq. CIV 1310)

The course covers a variety of topics including: pipe networks; water hammer; pumps, pump selection; pipe-pump combination; flow in open channels, uniform flow formula, gradually varied flow calculations, hydraulic jump; drag forces on bodies; principles of hydrology, unit hydrograph, and rainfall-runoff relationships.

CIV 1340 Environmental Engineering I 4 Q.H. (Prereq. CHM 1132 and CIV 1310)

The course focuses on engineering approaches to protection and management of the environment. Topics include assessment of environmental quality; introduction to water and wastewater technology, air pollution control, and solid waste management.

CIV 1341 Environmental Engineering II 4 Q.H.
(Prereq. CIV 1340)

The course concentrates on development of fundamental physical, chemical, and biological phenomena of water and wastewater systems with engineering applications in water technology from source to ultimate disposal.

CIV 1350 Environmental and Hydraulics Lab 4 Q.H.

(Prereq. CIV 1340; CIV 1320 concurrently)

The course includes lectures, laboratory and field experiments in environmental and hydraulic engineering areas. Experiments in hydraulics area will cover: fluid properties, hydrostatics, drag forces, flow in pipes and channels as well as pumps and turbines. Experiments in the environmental area will include physical, chemical, and biological analyses normally used by environmental engineers. Field experiments will be coordinated to allow students to collect environmental and hydraulic data concurrently.

CIV 1360 Environmental Design 4 Q.H.
(Prereq. CIV 1320, CIV 1341, CIV 1350)

The course consists of several individual design projects in environmental engineering affording the student an opportunity to develop a sound engineering approach to water and wastewater management at the municipal level. Projects are given careful critique. There is one group project requiring an oral presentation.

CIV 1370 Air Pollution 4 Q.H.
(Prereq. Seniors only)

The course focuses on theory and practice related to engineering management of air resources; microclimate and dispersion of pollutants; atmospheric chemistry; air pollution instrumentation; control of gaseous and particulate emissions; design of air pollution control systems; biological and chemical aspects of air pollution with emphasis on the toxicological aspects of the environment; physiological effects of aerosols; analysis of organic and inorganic constituents of the atmosphere; and rationale for establishment of air quality criteria and standards.

CIV 1390 Survey of Environmental Problems 4 Q.H.

(Prereq. Nonengineers only; permission of instructor)

A survey of problems associated with man's use of the environment. Course material includes interrelation of the air-water-land complex, with emphasis on ecological stresses produced, and methodologies for assessing and controlling man's environmental impact.

CIV 1410 Soil Mechanics 4 Q.H.
(Prereq. CIV 1211 and CIV 1310)

Course material includes soil classification, soil-water phase relations, ground water seepage, con-

solidation theory, strength properties of soils, stress distributions in soils due to surface loads, slope stability.

CIV 1411 Soil Mechanics Lab 2 Q.H.*
(Taken concurrently with CIV 1410)

The course focuses on laboratory exercises, including soil classification, seepage, shear strength, consolidation, and triaxial testing.

CIV 1420 Foundation Engineering 4 Q.H.
(Prereq. CIV 1410)

Topics normally include subsurface explorations, determination of soil-bearing capacity, design of shallow foundations, pile and caisson foundations, design of retaining walls, anchored bulkheads and braced sheeting, and other selected topics on foundation design and construction.

CIV 1430 Geotechnology 4 Q.H.
(Prereq. Juniors and seniors only)

An introduction to the geological sciences as they apply to civil engineering practice, the course focuses on the effects of significant geological features on location, design, construction, operation, and maintenance of engineering projects.

CIV 1510 Materials 4 Q.H.
(Prereq. CHM 1132)

The course focuses on the structural, chemical, and mechanical properties of materials of importance to civil engineers; fundamental nature of matter; significance of phase transformations; control of microstructure; mechanisms of failure of materials.

CIV 1511 Materials Laboratory 2 Q.H.
(Prereq. Taken concurrently with CIV 1510)

A laboratory in which standard tests and equipment are used to determine structural and mechanical properties of materials common to civil engineering practice: concrete, aggregates, steel, wood, asphalt, glass, etc.

CIV 1530 Transportation Analysis and Planning 4 Q.H.

(Prereq. Juniors and seniors only)

Course material includes establishment of planning framework; demand modeling from regional economy to transportation network assignments; mode selection; technical and economic evaluation; and current issues including environmental assessment, transportation systems management, citizen participation, and planning in developing countries.

CIV 1540 Highway Engineering 4 Q.H.
(Prereq. CIV 1620 and CIV 1410)

A general approach to highway engineering, topics normally include administration, economic factors, planning, environmental impacts, geometric design, drainage, and the design of flexible pavements.

*Lab fee required.

CIV 1550 Construction Management 4 Q.H.
(Prereq. Seniors only)

An overall perspective of the construction industry and tasks that must be addressed by construction management, including resource allocation, construction environment, organization, contracts, funding, cash flow, productivity, labor relations, network planning and scheduling, and project control and safety.

CIV 1610 Computer Applications in Civil Engineering 4 Q.H.
(Prereq. GE 1100)

Introduction to problem solving methods in civil engineering, especially those requiring a data processing machine. Examples of civil engineering problems are introduced and methods of solution discussed. Students are assigned several projects in implementing solution techniques on computers. Proficiency in computing, problem solving, documentation, and presentation is acquired by critiquing and classroom discussion.

CIV 1620 Engineering Measurements 4 Q.H.
(Prereq. MTH 1124 and PHY 1222)

The mathematics and instrumentation used in land surveying for obtaining measurements of distance, elevation, and direction, and the methodology applied for traverses, areas, coordinate systems, horizontal and vertical curves, earthwork, and topographic mapping.

CIV 1621 Engineering Measurements Laboratory 2 Q.H.*
(Prereq. GE 1100)

Taken simultaneously with CIV 1620, the course consists of field problems illustrating and applying the lecture material in CIV 1620, with computer applications.

CIV 1630 Civil Engineering Systems 4 Q.H.
(Prereq. MTH 1223)

The course covers application of system synthesis and optimization techniques for civil engineering students; calculus method, linear programming, network analysis, and dynamic programming.

CIV 1640 Applied Probability Theory for Civil Engineers 4 Q.H.

(Prereq. MTH 1223)

Topics normally include applications of probability theory to civil engineering problems, probabilities of events, random variables and distributions, derived distributions, expectation, common probability models, and an introduction to statistics.

CIV 1650 Legal Aspects of Civil Engineering 4 Q.H.

(Prereq. Seniors only)

Business law for the engineering organizations, including description and evaluation of various types of contracts for engineering services and construction, procedures for submitting bids, procedures for claims and legal steps to minimize risk exposure, both in U.S. and international business.

CIV 1660 Technology Assessment 4 Q.H.
(Prereq. Permission of instructor)

The course focuses on fundamental concepts of technology assessment, such as the problems of externalities, decision analysis, risk assessments, the problems of scale, and technological monocultures. The unintended impacts or the higher-order effects of technologies are stressed throughout the course.

CIV 1810 Special Topic In Civil Engineering 4 Q.H.

(Prereq. Permission of instructor)

This is a special course within the field of civil engineering initiated by the appropriate discipline committee and approved by the department.

CIV 1820 Special Project in Civil Engineering 4 Q.H.

(Prereq. Outstanding academic performance)

The course offers individual study in an area within the field of civil engineering, selected by the student and his or her instructor with approval by the appropriate discipline committee, resulting in a definitive report and an oral presentation.

Electrical Engineering

The course descriptions listed under Electrical Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

ECE 1101 E.E. Laboratory I-A 1 Q.H.*
(Prereq. PHY 1223)

The course focuses on basic electrical measurements; report writing; and use of laboratory instruments, including digital voltmeters, oscilloscopes, and bridges.

ECE 1102 E.E. Laboratory I-B 1 Q.H.*
(Prereq. ECE 1101)

A continuation of ECE 1101, E.E. Laboratory I-A.

*Lab fee required.

ECE 1103 E.E. Laboratory I-Measurements**2 Q.H.***

(Prereq. ECE 1211)

The course covers basic electrical measurements; report writing use of standard laboratory instruments, including digital voltmeters, oscilloscopes, and bridges.

ECE 1171 Electrical Engineering I**4 Q.H.**

(Prereq. MTH 1125; not open to electrical engineering majors)

Introductory course to electric circuit theory covers Kirchhoff's laws, loop and nodal analysis, Thevenin's theorem, power and energy, exponential excitation and the system function.

ECE 1172 Electrical Engineering II**4 Q.H.**

(Prereq. ECE 1171; not open to electrical engineering majors)

Properties and analysis of electronic devices, circuits, and systems; elements of control systems; principles of energy conversion. Emphasis on each topic determined according to major discipline.

ECE 1173 Power Systems and Controls**4 Q.H.**

(Prereq. ECE 1171)

Basic concepts of electromechanical energy conversion stressing the terminal characteristics and operation of d-c and a-c machines, elements of power distribution systems, and concepts of feedback control, with application to power systems and plant control.

ECE 1174 Basic Electrical Instrumentation**4 Q.H.***

(Prereq. ECE 1171)

Basic electrical measurement devices, including ammeters, voltmeters, oscilloscopes, and bridges; instrumentation techniques such as direct measurement, comparative measurement, and analog methods. Application to nonelectrical disciplines is included.

ECE 1175 Modelling Techniques**4 Q.H.**

(Prereq. ECE 1171 and ECE 1172; also FORTRAN IV programming)

Introduction to the concept of modelling techniques to represent physical, biological, and social systems; electrical analogs and use of analog computers; introduction to digital modelling and the use of digital computation.

ECE 1191 Introduction to Digital Computers I: Design and Organization**4 Q.H.**

(Prereq. PHY 1223 and MTH 1223)

Introduction to the basic components of digital systems and methods for their analysis and design: logic gates and flipflops, Boolean algebra, and combinational and sequential circuits. Integrated circuit logic families and functional building blocks: registers, counters, decoders, multiplexers, and memories. Data representation and coding techniques. Register-transfer lan-

guage for specification of instruction sets, processor organization, and logic design. Case study of a specific central processor instruction set implementation. Assembly language programming techniques and introduction to system software.

ECE 1192 Introduction to Digital Computers II: Fundamentals of Computation Structures**4 Q.H.**

(Prereq. ECE 1191)

Central processor alternatives: Instruction formats, addressing modes, bus structures, arithmetic units, timing analysis, and stacks. Algorithms for arithmetic operations with various data representations. Input-output and memory organization. Introduction to microprocessors. This course, like its predecessor ECE 1191, is oriented toward the design, not just the comprehension, of digital systems likely to be encountered by the electrical engineer.

ECE 1211 Circuits and Systems I**4 Q.H.**

(Prereq. MTH 1125 and PHY 1223)

The course covers circuit elements (linear, non-linear, time-invariant, and time-varying), sources (independent and controlled), Kirchhoff's laws, Tellegen's theorem, Thevenin's theorem, network topology, mesh and nodal analysis.

ECE 1212 Circuits and Systems II**4 Q.H.**

(Prereq. ECE 1211)

Topics include linearity and time-invariance, system function, forced and force-free response of networks and LTI systems, singularity response, partial fraction expansion, "pre-box" concept, and convolution.

ECE 1213 Circuits and Systems III**4 Q.H.**

(Prereq. ECE 1212)

Topics include Thevenin's theorem revisited, magnitude and phase plots, resonance, two-port networks, energy and power and convolution.

ECE 1214 Circuits and Systems IV**4 Q.H.**

(Prereq. ECE 1213)

The course focuses on basic concepts and techniques of linear system theory. Review of system theory in terms of the convolution integral; waveform representation in terms of the Fourier series, Fourier Integral, and the bilateral Laplace transform; system concepts in terms of the function and their application to filters and feedback systems.

ECE 1219 Circuits and Systems A**6 Q.H.**

(Prereq. MTH 1125 and PHY 1223)

Includes the material covered in course ECE 1211, Circuits and Systems I, plus half of the material in course ECE 1212, Circuits and Systems II.

ECE 1220 Circuits and Systems B**6 Q.H.**

(Prereq. ECE 1219)

Completes the material in ECE 1212, Circuits and Systems II, plus the material in course ECE 1213, Circuits and Systems III.

*Lab fee required.

ECE 1301 E.E. Laboratory II-A 1 Q.H.*
(Prereq. ECE 1102)
Experiments in conjunction with courses ECE 1211 and ECE 1212, Circuits and Systems I and II. Additional experiments in measurements.

ECE 1302 E.E. Laboratory II-B 1 Q.H.*
(Prereq. ECE 1301)
Continuation of ECE 1301 in conjunction with courses ECE 1213 and ECE 1214, Circuits and Systems III and IV.

ECE 1303 E.E. Laboratory II-Circuits and Systems 2 Q.H.*
(Prereq. ECE 1212)
The course includes experiments relevant to the Circuits and Systems courses, together with more work in measurements.

ECE 1304 E.E. Laboratory III-A 1 Q.H.*
(Prereq. ECE 1302)
Introduction to the digital computer and logic circuits, as well as experiments tied in with ECE 1346 and ECE 1347, Electronics A and B.

ECE 1305 E.E. Laboratory III-B 1 Q.H.*
(Prereq. ECE 1304)
Continuation of ECE 1304 with some experiments relevant to ECE 1361 and ECE 1362, Field Theory I and II.

ECE 1306 E.E. Laboratory III-Devices 2 Q.H.*
The course includes introduction to the digital computer, electro-optics, terminal characteristics of active devices.

ECE 1307 E.E. Laboratory IV 2 Q.H.*
(Prereq. ECE 1361)
The course includes logic circuits, design and testing of active circuits, microwave studies, control systems, digital computation.

ECE 1331 Discrete Systems 4 Q.H.
(Prereq. GE 1100)
Topics include historical review and future perspectives of discrete systems; representation of digital signals, quantization; introduction to digital filters, moving average filters; Z-transforms, inverse Z-transforms; recursive digital filters, stability considerations, steady-state and transient response; introduction to non-recursive techniques, the discrete Fourier transform, the fast Fourier transform; applications to computation of systems transfer functions.

ECE 1346 Electronics A 4 Q.H.
(Prereq. ECE 1213)
This first course in electronics stresses the use of transistors in digital integrated circuits. Topics include fabrication and processing of integrated circuits, characteristics of the theoretical physical junction, Ebers-Moll model for bipolar junction transistors, characteristics of bipolar and field-effect devices, basic digital inverters and logic gates and various logic families (CMOS, TTL, MOS, and I^2).

ECE 1347 Electronics B 4 Q.H.
(Prereq. ECE 1346 and ECE 1214)
This second course in electronics stresses the use of transistors in the design of analog circuits. Much of the emphasis is on integrated circuit devices. Topics covered include biasing, linearized incremental models involving controlled sources, load line techniques, early effect, use of signal flowgraphs for solving circuits, frequency response and gain calculations for single stage and cascaded stages, and differential and operational amplifiers.

ECE 1348 Electronics C 4 Q.H.
(Prereq. ECE 1347)
This third course in electronics continues the development of analog electronic circuits. Topics include concept of feedback, open- and closed-loop gain, effect of feedback on impedance levels and frequency response, limitations on the performance of operational amplifiers, stability and compensation in feedback systems, analog circuit applications, and an analog/digital system design example.

ECE 1361 Electromagnetic Field Theory I 4 Q.H.
(Prereq. MTH 1225)
The course focuses on definition and representation of scalar and vector fields. Coordinate systems; elements vector calculus; definition of the concepts of gradient, divergence, curl, and the "del" operator, free-space electrostatics; definition of the electric field intensity; the scalar potential; solution to Poisson and Laplace equations; macroscopic model of dielectric materials; the electric polarization and the electric flux density vector; boundary conditions; Lorentz force; free space magnetostatics; magnetic vector potential and solution to the "vector" Poisson equation; macroscopic model of magnetic materials; magnetization and magnetic field intensity; boundary conditions.

ECE 1362 Electromagnetic Field Theory II 4 Q.H.
(Prereq. ECE 1361)
Topics include generalization of the Maxwell equations to the case of time-varying fields; Faraday induction law; wave equations and the plane wave solution; Poynting theorem and the concept of energy stored by the fields; reflection and refraction of plane waves; time-harmonic wave equations for the scalar and vector potentials; time-harmonic form of retarded potentials; radiation from dipole; motion of charged particles in fields; magnetoionic media; elementary discussion of plasma physics and M.H.D.

ECE 1375 Electromechanical Dynamics 4 Q.H.
(Prereq. ECE 1213, and ECE 1361)
The course offers review of the Maxwell equations and quasistatic approximations, electric and

magnetic energy concepts, state-variable formulation of electromechanical coupling. Applications to elementary energy conversion devices, singly and doubly excited magnetic devices with mechanical, translational, and rotational elements. Generalized rotating electromagnetic energy converters, circuit-model concepts; applications to selected extant rotating machines, i.e., commutator machines and a-c machines; dynamic response to various stimuli are studied.

ECE 1376 Machines and Systems 4 Q.H.
(Prereq. ECE 1375)

The course offers a detailed investigation of the operating principles of synchronous machines, synchronous motor and generator power-angle characteristics, machine dynamics, machine and power system stability.

ECE 1377 Introduction to Electric Machinery 4 Q.H.

(Prereq. ECE 1361)

Topics include review of magnetic field, energy, and energy conversion concepts. Transformers and their circuit representations; application of energy conversion concepts to basic rotating machines and exploration of the Theory of Induction, synchronous, and d-c machines. Limitations in actual machines will be discussed.

ECE 1378 Transients In Electric Power Systems 4 Q.H.

Introduction to the response of various elements of a power network to the transients caused by lightning, switching, and faults. Some of the equipment to be considered in terms of transient response include the transmission line, lightning arresters, fuses, transformers, and circuit breakers.

ECE 1390 Senior Project Laboratory I 2 Q.H.*
(Prereq. ECE 1347 and ECE 1362)

In this course, students work with a faculty adviser on some term project, either experimental or theoretical.

ECE 1391 Senior Project Laboratory II 2 Q.H.*
(Prereq. ECE 1347 and ECE 1362)

This course may be a continuation of the project started in ECE 1390 or it may be a new project. Again, the student works closely with a faculty adviser.

ECE 1400 Special Topics 4 Q.H.
(Prereq. Permission of department)

Topics covered vary from term to term depending on the interests of the department and the students.

ECE 1401 Selected Topics In Electronics 4 Q.H.

(Prereq. ECE 1347)

This course concerns (1) the description and application of those electronic devices (thyristors, photodiodes, etc.) not covered in depth in the reg-

ular electronics sequence; (2) electronic subsystems (AFC, shift registers, etc.); (3) systems (navigation systems, telephone switching systems, etc.). Most of the presentations are made by students on topics of their choice, but there are also lectures by invited speakers as well as by the instructor.

ECE 1404 Theory and Technology of Semiconductor Devices I 4 Q.H.*
(Prereq. ME 1386)

This course comprises a closely coupled lecture and laboratory series. Topics covered include technology and physics of the planar diffusion process, electronic properties of homogeneous semiconductors, inhomogeneities and junctions (Fermi potential diagrams, equilibrium at an abrupt discontinuity, and the behavior of a junction under applied bias), and the junction transistor.

ECE 1405 Theory and Technology of Semiconductor Devices II 4 Q.H.*
(Prereq. ECE 1404)

This course is a continuation of ECE 1404. Material covered includes introduction to unipolar transistor action, introduction to surface effects, the MOS-FET, and a discussion of noise problems encountered in semiconductor devices.

ECE 1418 Control System Theory 4 Q.H.
(Prereq. ECE 1347)

Control system concepts; goals and basic components. Review of time- and frequency-domain techniques. Classical control system theory; error analysis for different systems. Analysis of second- and third-order systems. Stability and relative stability using root locus and Nyquist diagrams. The Nichols chart. Compensation, application of computer technology to control systems analysis and design. State-variable description of dynamic systems. The state equations and the fundamental analog realization of the standard equations. Properties of the state-transition matrix. Optimal systems. Introduction to sampled data systems. The Z-transform as an analog to the Laplace transform.

ECE 1430 E.E. Power Laboratory A 1 Q.H.*

ECE 1431 E.E. Power Laboratory B 1 Q.H.*

ECE 1433 E.E. Power Laboratory I 2 Q.H.*

The course covers experimental work with polyphase power equipment, power measurements, polyphase power rectification, steady-state and dynamic operation modes of polyphase induction motors, power transformers and symmetrical component analysis of unbalanced loading of transformers, analog computer.

ECE 1434 E.E. Power Laboratory II 2 Q.H.*
(Prereq. ECE 1431)

The course covers experimental work with rotating machinery and systems; steady-state and

*Lab fee required.

dynamic modes of operation of the commutator and synchronous machines, system study involving synchronous machines; selected experiments in control systems, network analyzer studies.

ECE 1451 Communication Theory 4 Q.H.
(Prereq. ECE 1214)

Topics include signal analysis, including signal classes, Fourier methods, correlation functions, amplitude density, and power spectra; amplitude modulation, Hilbert transform applications, analytic signal, and complex envelope.

ECE 1452 Fundamentals of Communication Systems 4 Q.H.
(Prereq. ECE 1451)

Topics include frequency modulation, signal-to-noise ratios in AM and FM, multiplexing, sampling theory, pulse modulation systems, data transmission, signal space. Correlation detection, probability, random variables and random processes, information theory and coding.

ECE 1461 Wave Transmission and Reception 4 Q.H.
(Prereq. GE 1100 and ECE 1361)

Topics include analysis of radiation, transmission, and reception of electromagnetic and acoustic waves using graphical and digital computer techniques. Design of distributed systems, antennas, microphones, loudspeakers, and sonar transducers.

ECE 1462 Advanced Topics In Electromagnetic Field Theory 4 Q.H.
(Prereq. ECE 1362)

This course is a continuation of the required courses in field theory. Topics covered include microwave and waveguide structures; careful development of electromagnetic energy and force concepts, and an introduction to radiation and antenna theory.

ECE 1471 Electrical Power Systems I 4 Q.H.
(Prereq. ECE 1213)

This course, together with ECE 1472, Electrical Power Systems II, is designed to give a broad view of the structure of those electric systems having the primary function of energy transfer and especially those that function to transfer large quantities of energy. The functions of the various system elements are described and their significant characteristics are investigated briefly. The interrelation between elements is treated.

ECE 1472 Electrical Power Systems II 4 Q.H.
(Prereq. ECE 1471)

A continuation of Electrical Power Systems I. Problems such as voltage control, protection, economics, and planning that relate to the system as a whole. Taken with the previous course, it may provide a general background for more intensive studies of electric power systems. *NOTE: A student may take both electives in sequence or the first course only.*

ECE 1481 Machine Language and Assembly Language Programming 4 Q.H.
(Prereq. ECE 1191)

This course focuses on study of the machine and assembly languages of a selected digital computer. Machine representation of numbers, characters, and instructions. Machine language programming; flow of control, relocatability, input/output instructions, addressing, and instruction modification. Symbolic assembly language; macros, literals, and pseudo-instructions. Several programming projects are an integral part of the course.

ECE 1482 Programming Systems 4 Q.H.
(Prereq. ECE 1481)

Continuation of ECE 1481. Assemblers, searching and sorting techniques, macro-processors loaders. High-level languages and an introduction to their compilation. Introduction to operating systems. Programming projects are an integral part of the course.

ECE 1484 Applied Discrete Analysis 4 Q.H.
(Prereq. MTH 1225)

The course offers an introduction to elementary number theory, modern algebra, combinatorial mathematics and discrete probability theory, including such topics as prime numbers, least common multiple, greatest common divisor, Euclid's algorithm, continued fractions, congruences, groups, rings, fields, Boolean algebra, combinations and permutations, generating functions, random variables, and Markov chains. The material in this course is widely applicable to the field of computer science.

ECE 1485 Microcomputer-Based Design 4 Q.H.
(Prereq. ECE 1192)

Course material includes characteristics of microprocessor applications; external and internal architecture of a specific microprocessor family; logic design of a simple microcomputer. Instruction set, timing cycles, I/O port selection and interrupt-handling; software design for keyboard monitor, breakpoint facility and multiplexed displays. Application design studies of real-time interfaces to electromechanical devices. Evolutionary trends in LSI microprocessors and memory systems. Integrated hardware and software design projects using laboratory microcomputers are an integral part of this course, which is designed primarily for electrical engineers.

ECE 1486 Numerical Methods and Computer Applications 4 Q.H.
(Prereq. GE 1100 and ECE 1214)

The course focuses on presentation of numerical techniques used in solving scientific and engineering problems with the aid of digital computers. Topics covered include modeling and simulating of deterministic and probabilistic systems, theory of interpolation, iteration methods,

numerical solution of ordinary and partial differential equations, signal detection, and use libraries of scientific subroutines. Representative problems are chosen for solution on a digital computer.

ECE 1487 Digital Techniques 4 Q.H.

(Prereq. ECE 1346 and ECE 1191)

This course attempts to supplement the topics covered in the electronics sequences and the introduction to digital computer courses. Topics may vary from year to year and may include details of semiconductor integrated gate circuits, flip flops, clocks, counters, memory units, A/D and D/A conversions, coding, and the fundamental techniques of digital data transmissions.

ECE 1492 Mathematical Techniques in Electrical Engineering I 4 Q.H.

(Prereq. MTH 1225)

The goals of this course are: (1) to introduce the basic precepts of the Theory of Complex Variables; (2) to organize and codify the student's understanding of analysis (i.e., the properties of analytic functions; (3) to augment the student's sensitivity to questions of rigor and the limitations

on the applicability of fundamental techniques; (4) to provide an appreciation of nineteenth-century mathematics and those who contributed to it; (5) to suggest applications of the subject matter without being an applications course per se.

Topics, depending on time and student background, include complex numbers and functions of a complex variable; infinite series, uniform continuity, and convergence; Cauchy theorems and formulas; the calculus of residues; conformal representation, integral functions; and special functions.

ECE 1493 Mathematical Techniques in Electrical Engineering II 4 Q.H.

(Prereq. MTH 1225 or equiv.)

Topics include matrix notation and development of matrix algebra. The solubility of sets of linear equations; determinants, linear transformations, invariance, quadratic forms and eigenvalues. Illustrative applications of matrix techniques for the formulation and solution of problems are drawn from the realm of circuit theory, probability theory, and engineering physics.

General Engineering

The course descriptions listed under General Engineering are intended to show the scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

GE 1100 Computer for Engineers 4 Q.H.

Introduction to use of computers in the solution of engineering problems; FORTRAN programming language. A survey of the organization and function of an elementary digital computer; the use of flowcharts in developing program logic; establishing and manipulating tables, arrays, and matrices in memory, using subprograms and subroutine packages, and graphical output on an X-Y plotter.

GE 1106 FORTRAN Programming 4 Q.H.

(Prereq. One year college math)

The course focuses on techniques for programming problems on any large computer. Emphasis is on general programming methods using the language of FORTRAN. A large number of example problems are presented in an effort to display the applicability of computers to a wide variety of professional activities. No prior computer experience is required.

GE 1107 Advanced FORTRAN Programming 4 Q.H.

(Prereq. GE 1106)

Higher-level aspects of the FORTRAN language are considered. Topics covered include the use of

software packages, the manipulation of large data arrays, processing of nonnumeric information, magnetic tape operations, and data-file management. An introduction to systems analysis is presented, with emphasis on Monte Carlo and queuing simulation techniques.

GE 1110 Engineering Graphics and Design 4 Q.H.

The orthographic system as a means of depicting three-dimensional objects and concepts on a two-dimensional medium. Progression from principal views to auxiliary views and sections. Reading and interpreting detail and assembly drawings and depiction by means of pictorial drawings and sketches. Fundamentals of manufacturing processes and dimensions and their interrelations. Elements of design and student involvement by evaluation of existing design, components, and systems. The student as the creative designer-engineer. Computer graphics as an introduction to computer-aided design.

Industrial Engineering

The course descriptions listed under Industrial Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

IIS 1125 COBOL Programming I 4 Q.H.

This course covers fundamentals of computer programming in COBOL. Topics include elementary computer functioning, program organization, input/output operations, arithmetic and data-handling verbs, and program logic development through the use of flow charts. Storage and manipulation of large data files on magnetic tape are introduced. No prior computer experience is required.

IIS 1126 COBOL Programming II 4 Q.H.

(Prereq. IIS 1125)

Higher-level aspects of the COBOL language are considered. Included are use of decision tables in developing program logic, improving program efficiency; error detection and minimization techniques; bulk data storage in magnetic tape and disc files; storing, merging, updating, sorting, and purging data files; generating reports.

IIS 1200 Work Design 4 Q.H.

Topics include principles of work physiology; workplace design from the standpoint of employee safety and effectiveness; work measurement techniques, including direct measurement, synthetic standards, and work sampling.

IIS 1300 Probabilistic Analysis for Engineers 4 Q.H.

(Prereq. Integral & Differential Calculus)

Probability theory presented axiomatically, with emphasis on sample space representation of continuous and discrete random variables. Material will cover standard distributions. Topics include expectation, transform techniques, and change of variable.

IIS 1310 Statistics I 4 Q.H.

(Prereq. MTH 1387)

The course examines definition of a statistic; distributions of random variables, including normal, t, chi-square, F, Poisson, binomial; estimation of parameters, point estimation by method of moments, maximum likelihood, and Bayes estimates.

IIS 1320 Statistics II 4 Q.H.

(Prereq. IIS 1310)

Topics include internal estimation, stating and testing hypotheses, linear regression, analysis of variance, applied topics such as reliability and decision theory from Bayes rule.

IIS 1330 Principles of Computation and Programming I 4 Q.H.

(Prereq. FORTRAN)

The course covers review of algorithms, computers, and programming. Machine language programming (instruction, execution, and addressing

techniques). Coding and representation of data. Program debugging and verification. Survey of machines, devices, and languages.

IIS 1340 Operations Research I 4 Q.H.

(Prereq. MTH 1224)

Topics include deterministic models, including LP and duality; transportation and allocation; sensitivity and post-optimality analyses. Network analysis, including maximal flow, shortest route, and PERT; dynamic programming and recursive functional expressions; game theory.

IIS 1341 Operations Research II 4 Q.H.

(Prereq. IIS 1310)

The course focuses on the stochastic models in OR; their analytical development and solution. Topics covered include queuing, models, deterministic and stochastic inventory models, Markov chains, and sequencing.

IIS 1345 Management Information Systems 4 Q.H.

Topics include managerial applications of digital computers; the use of computers in information, decision-support systems; information-based theories of management; survey of information technology; computer system basics; cost and value of information; system design, analysis, equipment selection; organizational implications.

IIS 1346 Basic Engineering Statistics 4 Q.H.

(Not open to industrial engineering majors)

The course covers introduction to basic probability distributions, including the binomial and hypergeometric, exponential, Poisson, and normal; laboratory data analysis.

IIS 1350 Digital Simulation Techniques 4 Q.H.

(Prereq. FORTRAN and IIS 1310 or IIS 1346)

The course covers design and construction of digital, discrete simulation models. Extensive use of FORTRAN and GPSS simulation language. Discussion of model logic and specification, testing, validation, and use. Several simulation projects using the Northeastern computer facilities.

IIS 1356 Engineering Economy 4 Q.H.

(Prereq. B.E.T. majors only)

Topics include the formulation of analytical techniques, i.e., rate of return, present worth, and annual cost. The application of these techniques to solve business and engineering problems involving design, selection replacement, lease-buy decisions, and decisions between multiple alternatives. Sensitivity analysis and basic probability are introduced in cases where uncertainty exists. Brief survey of sources and costs of capital, debt-versus-equity financing, and leverage.

IIS 1360 Engineering Economy and Statistical Decisions Theory 4 Q.H.

(Prereq. IIS 1300 or MTH 1387)

The objective of the course is to familiarize the student with the theory and techniques of economic evaluation of an investment project. Introductory steps in the analysis of investment proposals, time value of money, and cash flows; analysis of deterministic and stochastic cash flows in terms of present worth, annual cost, rate of return, and benefit/cost ratio. Decision tree for sequential decisions, criteria for decision making under uncertainty, utility theory, value of information, effect of accounting procedures and taxes on investment analysis. Case studies involving replacement, lease, engineering design, and public projects.

IIS 1366 Engineering Economy 4 Q.H.

(Not open to industrial engineering majors)

Topics include the formulation of analytical techniques, i.e., rate of return, present worth, and annual cost. The application of these techniques to solve business and engineering problems involving design, selection, replacement, lease-buy decisions, and decisions between multiple alternatives. Sensitivity analysis and basic probability are introduced in cases where uncertainty exists. Brief survey of sources and costs of capital, debt-versus-equity financing, and leverage.

IIS 1370 Industrial Cost Control 4 Q.H.

Topics include fundamental concepts of accounting, with emphasis on using financial records to make engineering decisions. Study of financial statements of a firm. Contrast in usefulness of data from absorption costing vs. direct costing. Interpretation of variance accounts.

IIS 1400 Systems I 4 Q.H.

(Prereq. MTH 1224)

Topics include linear feedback systems and solutions of first-order systems; integral and derivative control; Laplace transforms for continuous systems analysis and Z-transforms the DYNAMO language to simulate complex feed-back systems.

IIS 1401 Systems II 4 Q.H.

(Prereq. IIS 1300, IIS 1350, and IIS 1340)

The course examines analysis and design of major industrial engineering systems. Students are expected to undertake up to five projects drawn from line balancing, job shop scheduling, stochastic network analysis, reliability in design, complex queuing system design, sequencing, or other areas of student and faculty interest.

IIS 1405 Production and Inventory Control 4 Q.H.

(Prereq. IIS 1300 or equiv.)

Topics include basic inventory models and inventory management systems. Single-stage and multi-stage systems and their dynamics. Production control and aggregate planning. Mathematical

and heuristic approaches to aggregate scheduling. Cost structure and decision-oriented analyses. Consideration of job shop scheduling and dispatching problems.

IIS 1415 Facilities Design 4 Q.H.

(Prereq. IIS 1340)

The course examines use of descriptive and optimizing models (e.g., simulation, queuing theory, and linear programming) to design facilities and associated materials-handling systems. Computer-assisted layout analysis techniques are applied to problems of real-world scope.

IIS 1425 Material Handling System Design 4 Q.H.

(Prereq. IIS 1340)

The course covers design and analysis of large material-handling systems. Topics include computer control of handling systems, integration with production and inspection, automated storage/retrieval systems, automatic identification systems, and systems acquisitions.

IIS 1435 Reliability and Quality Control 4 Q.H.

(Prereq. IIS 1310)

Applied probability and statistical inference techniques are utilized in reliability analysis and quality control. Both theory and application are discussed in relation to the total quality assurance program.

IIS 1455 Microcomputer Programming 4 Q.H.

(Prereq. GE 1100 or FORTRAN programming language)

A first course in microprocessor computing covers hex codes for assembly language. Basics of architecture model, programming model, and addressing modes. Instruction set for typical machine. Programming techniques and details for a 6502 processor. Hands-on laboratory experimentation with typical interfacing problems. Case studies in the area of developing applications. Laboratory experimentation in staffed facility.

IIS 1465 Microprocessor Applications 4 Q.H.

(Prereq. IIS 1455, assembly language or permission of instructor)

System architecture of several microcomputers, including microprocessors; bus design, multichip operation, and current trends in processors (8-, 16-, and 32-bit). Interfacing problems and hardware to include: sensors, actuators, D/A and A/D converters, data transmission, and parallel/serial I/O. Real-time programming with case studies. Network and distributed processing. Also included are development techniques and current state-of-the-art trends.

IIS 1470 Human Considerations in Engineering Design 4 Q.H.

This is an introductory human factors course with emphasis upon the physiological and anthropometric bases of equipment and workplace design. Topics include: (1) thermal regulation and heat stress; (2) work and fatigue; (3) acceleration

and whole-body vibration stress; (4) ambient noise and auditory system damage; (5) body measurements and equipment design. As feasible, theory is related to student experiments.

IIS 1475 Human Factors 4 Q.H.

This is an introductory course with emphasis upon human sensory/motor performance and information-processing capabilities. Includes application to the design and performance of human/machine systems. Topics include: (1) function and performance of the visual and auditory senses; (2) concepts of information theory and signal-detection theory; (3) cognitive channel capacity and selective attention. The course is built around a series of experiments that explore theories of human performance in skilled-task execution.

IIS 1480 People in Organizations 4 Q.H.

(Prereq. Seniors only)

Topics include the individual in the work environment: work theory, motivation, and interpersonal relations based on the concepts of the behavioral sciences; structure and dynamics of organizations; problems of innovation; case studies for situational analysis to assist students who wish to develop skill in applying behavioral concepts.

IIS 1800 Independent Study In Industrial Engineering 1.4 Q.H.

Independent study on advanced I.E. topics for students usually in the senior year and with high scholastic standing. Projects may be of an applied or theoretical nature; formal report submitted to student's project supervisor at the end of quarter.

Mechanical Engineering

The course descriptions listed under Mechanical Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

ME 1301 Mechanics I 4 Q.H.

Topics include the concept of vector representation of force and moment; equivalent force systems; centroids and centers of gravity, distributed forces; equations of equilibrium; free body diagrams; applications to trusses, pin-connected frames and beams; and elementary concepts in friction.

ME 1302 Mechanics II 4 Q.H. (Prereq. ME 1301)

Topics include concept of stress and strain; principal stresses; Mohr's circle, stress-strain diagrams; moment of inertia of areas; stress and deformation of simple members under axial and torsional loads, and stresses in symmetrical beam bending.

ME 1303 Mechanics III 4 Q.H. (Prereq. ME 1301)

Development of problem-solving ability in the fundamentals of dynamics. Topics include kinematics of particles, kinematics of rigid bodies (nonrotating frames), mass moments of inertia, kinetics of particles and rigid bodies (plane motion only) using force, mass, and acceleration.

ME 1304 Mechanics IV 4 Q.H. (Prereq. ME 1303)

Topics include asymmetrical bending; analysis of determinate and indeterminate beams by various methods; and buckling of columns.

ME 1305 Dynamics 4 Q.H. (Prereq. ME 1302)

Continued development of problem-solving ability in dynamics. Topics include kinematics of rigid

bodies using rotating frames, kinetics of particles and rigid bodies using work and energy, introduction of Lagrange's equations, kinetics of particles and rigid bodies using impulse and momentum, and simple gyroscopic motion.

ME 1320 Dynamics 4 Q.H. (Open to civil engineering majors) (Prereq. CIV 1210)

Topics include kinematics, translating reference frames, mass moments of inertia, plane motion of rigid bodies, and instantaneous equations of motion.

ME 1321 Mechanics 4 Q.H. (Prereq. Electrical engineering majors only)

The course focuses on the study of kinematics and kinetics of rigid bodies, instantaneous equations of motion, work and energy, and impulse and momentum.

ME 1330 Design Fundamentals 4 Q.H. (Prereq. ME 1304)

The course focuses on engineering design analysis of dynamically loaded machine elements. Topics include stress concentration; contact and impact stresses, thorough treatment of fatigue factors in design (combined loading and statistical considerations); and environmental factors in design, creep, temperature, and atmosphere.

ME 1331 Mechanical Engineering Design 4 Q.H. (Prereq. ME 1330)

The course offers project(s), using system approach, that involve all aspects of mechanical engineering. This course is intended to provide

students an opportunity to correlate previous courses in design of mechanical systems.

ME 1332 Heat and Mass Transfer 4 Q.H.
(Prereq. ME 1345)

Heat exchanger design is explored by both the logarithmic mean temperature difference (LMTD) and the effectiveness-NTU (number of transfer units) methods. The radiant heat transfer, the nature of solar radiation, and the design of a flatplate solar collector are discussed.

ME 1340 Thermodynamics I 4 Q.H.
(Prereq. MTH 1223)

Thermodynamics is the study of systems in which energy and its flow across systems boundaries are important. In this first course energy, heat, and work are defined and used in the First Law of Thermodynamics. Other thermodynamic properties and equations of state are introduced, with emphasis on tabular and graphical forms for simple compressible systems and on the ideal gas. Phases and phase transitions are briefly discussed, and energy analysis of both open and closed systems is examined. The Second Law of Thermodynamics and the property entropy are introduced, and their macro- and microscopic implications discussed. Emphasis, however, is placed on the macroscopic consequences of irreversibility and the limitation this places, through the Second Law, on the behavior of engineering systems. This course concentrates on basic concepts and their proper application to representative engineering systems.

ME 1341 Thermodynamics II 4 Q.H.
(Prereq. ME 1340)

Course includes study of vapor cycles for use with both fossil and nuclear fuels, consideration of various gas power cycles, including the Brayton and regenerative gas turbine cycles, and the Otto and Diesel cycles for reciprocating internal combustion engines. The concept of availability is introduced, integrated with the study of the above cycles, and followed by the thermodynamics of nonreacting mixtures, particularly for air-water vapor mixtures.

ME 1345 Heat Transfer I 4 Q.H.
(Prereq. ME 1340, ME 1370, and MTH 1226)

The theories that describe conduction, convection, and thermal radiation heat transfer mechanisms are studied. Steady-state and transient conduction problems are discussed in rectangular, cylindrical, and spherical coordinate systems. Electrical analogy and numerical methods are also considered. Convective heat transfer mechanisms are studied, and the concept of the Nusselt-Reynolds Number correlation is introduced. Description of thermal radiation heat transfer between surfaces is discussed.

ME 1370 Fluid Mechanics I 4 Q.H.
(Prereq. ME 1340, ME 1303, and MTH 1225)

The course offers an introduction to the concepts of fluid mechanics: fluid statics, including pressure distribution and forces on submerged surfaces; differential and integral formulations of conservation of mass, momentum, and energy with emphasis on control-volume applications; pipe flow with consideration of head loss, use of the Moody diagram and analysis of pipe networks.

ME 1380 Materials Science 4 Q.H.
(Prereq. ME 1340 and CHM 1132)

An introduction to materials science for engineers, emphasizing the structure-property-function relation. Topics include crystallography, structure of solids, imperfections in crystals, phase equilibrium, phase transformations, diffusion, and physical properties. A laboratory is included in this course.

ME 1386 Materials Science 4 Q.H.
(Prereq. ME 1340 and CHM 1132)

An introduction to materials science for engineers, emphasizing the structure-property-function relation. Topics include crystallography, structure of solids, imperfections in crystals, phase equilibrium, diffusion, and behavior of metals and semiconductors.

ME 1390 Measurements and Analysis 4 Q.H.*
(Prereq. ME 1340 and ME 1303)

Lecture subjects include design of experiments, instrumentation, measurements, data analysis, and report writing. Students apply the principles developed in class to a variety of laboratory experiments. Written reports are required.

ME 1401 Intermediate Strength of Materials 4 Q.H.

(Prereq. ME 1304)
Topics include analysis of curved beams, rings, and thick-walled pressure vessels; introduction to plane elasticity problems using rectangular and polar coordinate systems.

ME 1402 Engineering Analysis 4 Q.H.
(Prereq. ME 1304)

The course focuses on the numerical and experimental methods in stress analysis. Analytical techniques include an introduction to the finite element method. Experimental methods include, among others, strain gauge techniques and photoelasticity.

ME 1405 Mechanical Vibrations 4 Q.H.
(Prereq. ME 1302)

The course focuses on the study of one-, two-, and multi-degrees of freedom systems using classical, energy, Laplace, mobility, matrix, and computer techniques. A laboratory is included in this course.

*Lab fee required.

ME 1408 System Analysis and Control 4 Q.H.
(Prereq. ME 1302)

This course provides students the opportunity to gain a theoretical background for analyzing and designing a linear control system. System modeling, linear approximations and their limitations, transfer functions, and block diagramming; applications of the Laplace transform; transient and frequency response; and stability, frequency domain, and root locus techniques are discussed.

ME 1410 Design for Space Applications 4 Q.H.
(Prereq. ME 1302)

The course includes an exploration of Keplerian motion and transfer dynamics using Battin's solution. Optimization of transfer dynamics with respect to our solar system, and mass optimization, boost, and reentry dynamics are studied. System design is used throughout the course.

ME 1435 Computer Aided Design 4 Q.H.
(Prereq. GE 1100 and ME 1304)

The concepts of computational and numerical geometry for design are introduced. The implementation of computer graphics in design and use of computer-aided design packages are included. Principles of numerical control techniques to design and manufacture are covered. A design project is required.

ME 1439 Engineering Design 4 Q.H.
(Prereq. ME 1304)

This course is intended for students who take only one course in design. Design projects vary from year to year, but in general expand and correlate previous courses in design of mechanical systems.

ME 1440 Introduction to Combustion 4 Q.H.
(Prereq. ME 1341 and CHM 1132)

An introduction to the science and technology of combustion. The fundamental principles of thermochemistry, chemical equilibrium, and rates of reaction are reviewed and related to combustion processes in heat engines. The principles of combustion waves are introduced, and the mechanisms of various physical and chemical processes in combustion are discussed.

ME 1441 Direct Energy Conversion 4 Q.H.
(Prereq. ME 1341 and CHM 1132)

This course is concerned with means for converting heat directly into electrical energy. The operating principles of such devices, principally magnetohydrodynamic power generators and fuel cells, are discussed. Other topics, such as energy storage, thermionic converters, and irreversible thermodynamics as a basis for a unified theory of energy conversion may be included.

ME 1470 Fluid Mechanics II 4 Q.H.
(Prereq. ME 1370)

Topics include velocity potential and stream functions; circulation and Kelvin's theorem; two-

dimensional, steady irrotational incompressible flow; Karman-Pohlhausen method applied to two-dimensional boundary layers.

ME 1471 Fluid Machinery 4 Q.H.
(Prereq. ME 1370)

The course focuses on the general principles of turbomachinery: definitions of efficiency and a discussion of the requirements for similitude; machine selection to suit particular applications. Both liquid- and gas-handling machines are examined, and performance limits imposed by cavitation and choking are considered.

ME 1473 Gas Dynamics 4 Q.H.
(Prereq. ME 1370)

Course focuses on application of the principles of fluid mechanics to compressible flows. Wave propagation and the concepts of sound speed and Mach number are discussed. The emphasis is on one-dimensional steady flows with an examination of the effects of area change, friction, and heat transfer, including a consideration of normal shock waves and the possibility of choking.

ME 1480 Mechanical Behavior of Materials 4 Q.H.

(Prereq. ME 1380 and ME 1303)

The study of the physical basis for the mechanical behavior of solid materials, including elasticity, plasticity, viscoelasticity, and fracture. Application is made to structural alloys and polymers.

ME 1483 Materials Processing 4 Q.H.
(Prereq. ME 1380)

The course offers a survey of the essential features and materials limitation of various methods for processing materials. Topics include heat treatment (ferrous and nonferrous alloys), casting, forming, joining, and machining.

ME 1490 Special Topics 4 Q.H.
(Permission of the department)

Topics covered will vary from term to term depending on the interests of the students and the department.

ME 1495 Design and Analysis 4 Q.H.
(Prereq. ME 1331; cannot be taken simultaneously with ME 1496 or ME 1497)

A project must be of a design nature and must be approved by the faculty member under whom the student will work. A formal report must be submitted to the student's faculty supervisor at the end of the quarter.

ME 1496 Mechanical Engineering Project I 4 Q.H.*

(Prereq. CIV 1341; cannot be taken simultaneously with ME 1495 or ME 1497)

The project may be of an analytical or experimental nature. It must be approved by the faculty member under whom the student will work, and a formal report must be submitted to the student's faculty supervisor at the end of the quarter.

*Lab fee required.

ME 1497 Mechanical Engineering Project II**4 Q.H.**

(Prereq. ME 1390 cannot be taken simultaneously with ME 1495 or ME 1496)

If a project initiated under course ME 1496 is large enough in scope, a second project course may be taken with the approval of the faculty supervisor. A formal report must be submitted to the student's faculty supervisor at the end of the quarter.

ME 1540 Thermodynamics of Propulsion**4 Q.H.**

(Prereq. ME 1341 and CHM 1132)

The course focuses on application of the principles of thermodynamics and fluid mechanics to understanding the behavior of propulsion devices. Emphasis is on air-breathing engines such as the aircraft gas turbine and the ramjet. Various engine components, such as inlets, diffusers, compressors, combustors, turbines, and nozzles are discussed.

ME 1541 Nuclear Engineering I**4 Q.H.***

(Prereq. ME 1341)

The course offers a study of nuclear physics emphasizing atomic and nuclear structure, radioactive decay and nuclear reactions, with particular attention to fusion and fission. The course also examines health physics, nuclear instrumentation, and the production and uses of radioactive isotopes. A general comparison of thermal, fast, and breeder reactor types is made prior to a discussion of neutron interactions and their slowing down. The four-factor formula and diffusion equation are developed and applied to one-group theory for bare and reflected thermal reactors. Flux shaping as well as energy production and distribution within the core are discussed.

ME 1542 Nuclear Engineering II**4 Q.H.**

(Prereq. ME 1541)

The course focuses on development of two-group theory for thermal reactors and consideration of the physics and safety of fast reactors. Effect of reactivity change, either intentional or accidental, as well as changes due to temperature, fission product build-up, xenon build-up after shutdown, and fuel depletion are discussed. Reactor design considerations involving the interrelation of reactor physics, reactor engineering control, distribution of power, and fuel cycle management are considered.

ME 1545 Internal Combustion Engines**4 Q.H.**

(Prereq. ME 1341)

The concepts and theory of operation of internal combustion engines are presented based upon the fundamental engineering sciences of thermodynamics, gas dynamics, heat transfer, and mechanics. The design and operating characteristics of conventional spark-ignition, compression-ignition, Wankel, and stratified charge spark-ignition engines are discussed. Performance analysis using Newhall-Starkman charts and computer programs are included.

ME 1580 Engineering Materials**4 Q.H.**

(Prereq. ME 1380)

This course is concerned with the utilization of materials science in the application and selection of materials. Topics include reactions with environment, i.e., oxidation and corrosion, materials selection criteria, and materials engineering case studies dealing with materials selection and failure analysis.

Computer Science

COM 1100 PASCAL I**4 Q.H.**

Introduction to computers and computer programming using the language PASCAL. Brief overview of text editing and system commands. Basic concepts of PASCAL: built-in data types, variables, assignment, expressions, and input/output. Tools for structured programming: flow control constructs, procedures and functions, user-defined data types using arrays, records, and strings. Techniques for input/output to terminals and text files. Assignments will emphasize how to design programs systematically through the use of structured sub-units.

COM 1101 PASCAL II**4 Q.H.**

(Prereq. COM 1100)

A continuation of the study of the programming language PASCAL and its applications. Recursion and stacks. Quicksort. Pointer data types. Singly

and doubly linked lists. Introduction to trees. Files of some fixed data type. Use of procedures and functions as parameters. Sets. Variant records. Elementary graphics, if available on the computer being used.

COM 1102 LISP**4 Q.H.**

(Prereq. COM 1101)

This course introduces the fundamental concepts and applications of LISP programming and their relationship to computer science. Basic ideas underlying symbolic information processing and the role of LISP in this context. Practical examples of how LISP is used in computer science and industrial contexts. Discussion of how LISP relates to some important areas of computer science, namely: (1) LISP as the "systems language" of artificial intelligence, (2) LISP as an important example for the study of issues in programming lan-

*Lab fee required.

guage design and implementation, (3) LISP and functional languages, and (4) LISP as a tool for procedural and data abstraction and for the development of data-driven programs.

COM 1110 FORTRAN Lab 1 Q.H.
(Prereq. COM 1100)

The course offers an introduction to the elements of FORTRAN programming, including I/O, sub-program linkage, and methods of structured programming in FORTRAN.

COM 1111 DCL Lab 1 Q.H.
(Prereq. COM 1100)

Course includes elements of command language; procedure files and parameter exchange; device handling for both tapes and disks; detailed coverage of the command language for the computer at the Academic Computer Center.

COM 1112 LISP Lab 1 Q.H.
(Prereq. COM 1100)

The course focuses on elements of the list processing language LISP. (Given prior to Fall 1984 and to be replaced by the more extensive course COM 1102)

COM 1113 COBOL Lab 1 Q.H.
(Prereq. COM 1100)

An introduction to COBOL programming language for students who have already mastered another high level algorithmic language (such as PASCAL or FORTRAN). Topics include COBOL program structure, arithmetic and flow control, subroutines and procedures, report writing, searching, sorting.

COM 1130 Assembly Language I 4 Q.H.
(Prereq. COM 1101)

An introduction to computer organization and programming at the assembly language level. Topics include arithmetic instructions, memory organization and data representation, addressing modes, flow control instructions, subroutines, procedures and linkage with higher level languages, run-time stack structure, implementation of recursion, floating point and bit instructions, terminal I/O using system services or higher level languages, use of the debugger.

COM 1131 Assembly Language II 4 Q.H.
(Prereq. COM 1130)

Continuation of COM 1130. User-defined macros, system macros; character string instructions and parsing; decimal instructions, conversion, and editing; queue instructions; exception handlers; record management and file operations; low level queue I/O services; introduction to other system services.

COM 1201 Data Structures 4 Q.H.
(Prereq. COM 1101 and MTH 1409)

Introduction to complex data structures and corresponding algorithms for their manipulation. Arrays, lists, trees, sets, graphs, and queues.

Quicksort, heapsort, and an introduction to algorithm analysis. Height-balanced (AVL) trees. B-trees, including 2-3 trees. Hashing. As time permits, union and find operations on sets; depth-first search and shortest path algorithms on graphs; minimum cost spanning trees.

COM 1205 Software Design and Development 4 Q.H.
(Prereq. COM 1201)

This course will present the latest ideas and techniques in software methodology and provide a means for students to apply these techniques. Students will be presented with several large programming projects. It will be their task, working in groups, to organize, to manage, and to implement some of the projects.

COM 1310 File Structures 4 Q.H.
(Prereq. COM 1201 and COM 1131)

Access characteristics of secondary storage devices (tapes, disks and drums). External sorting and merging for heap files. Algorithms for common file operations on heap, hashed, ISAM, B-tree, dense indexes and TRIE file structures. Overflow techniques. Comparison of operations by block access count. Files with variable length records. As time permits, data compression techniques; structures for secondary access: multilist and inverted files; retrieval for partially specified records and ranges of records.

COM 1315 Data Base Management I 4 Q.H.
(Prereq. COM 1310 and MTH 1409)

This course will emphasize the concepts and structures necessary to design and implement a data base application and survey some existing systems. Introduction to data base concepts. Data base modeling and entity relationship diagrams. Review of physical data organization. The relational model, QUEL, and ISBL. Design of a relational model and normal forms. Data definition and data manipulation languages for network and hierarchical models. Comparison of models, some languages and implementations for these models.

COM 1316 Data Base Management II 4 Q.H.
(Prereq. COM 1315)

This course will focus on data base systems that support relational model applications. Topics will include recovery, query optimization, integrity, security and concurrency, with examples based on INGRES and SYSTEM R. Additional topics such as data base machines may be covered at the discretion of the instructor. Students will implement a small relational DBMS.

COM 1330 Systems Programming 4 Q.H.
(Prereq. COM 1111 and COM 1131)

The purpose of this course is to familiarize the student with organization of the components of a computer operating system, their functions and mutual interactions. Assemblers, the structure of an object file and an executable file, linkers. Mul-

tiprogramming, multiprocessing, and time sharing. Memory management, device management, file management, libraries, I/O control, shared images.

COM 1335 Operating Systems I **4 Q.H.**
(Prereq. COM 1330)

In-depth study of algorithms and problems encountered in operating system design. Asynchronous concurrent processes, monitors, deadlocks, virtual performance measurement and evaluation, security.

COM 1336 Operating Systems II **4 Q.H.**
(Prereq. COM 1335)

Students will have the opportunity to gain hands-on experience working with a small operating system and writing programs to enhance its capabilities by implementing some of the algorithms studied in COM 1335.

COM 1350 Automata and Formal Languages **4 Q.H.**

(Prereq. COM 1201 and MTH 1409)

Topics include finite-state machines and regular expressions; context-free grammars; parsing of deterministic context-free languages; pushdown automata; pumping theorems for regular and context-free languages; Turing machines, Church's thesis and the halting problem.

COM 1355 Compiler Design **4 Q.H.**
(Prereq. COM 1331 and COM 1350)

This is a course on the front end of a compiler. Quick review of FSA and language terminology. Topics include lexical analysis, recursive descent parsing, look-ahead parsing, precedence parsing, syntax-directed translation and syntactic error recovery. Particular emphasis will be on LALR (1) parsing as it is used in compiler-compilers. Possible projects include writing a recursive descent parser for a small language and/or practice using a compiler-compiler.

COM 1356 Compiler Design II **4 Q.H.**
(Prereq. COM 1355)

This is a course on the middle phase and back end of a compiler. It includes static issues such as type checking, symbol table organization, scope rules, and aggregate types such as arrays and records. Run-time structure, code optimization techniques and error recovery. Students will construct a compiler using a compiler-compiler for the front end and will write their own back end.

COM 1358 Analysis of Programming Languages **4 Q.H.**
(Prereq. COM 1102, COM 1110, COM 1355, and COM 1201)

Language design criteria and the evaluation of programming language concepts in terms of their contribution to the software development process. Topics will include interpretations vs. translation; binding; variables: scope, lifetime, value, type; structure of ALGOL-like languages: activa-

tion records; accessing the global environment, static chain and display; data types: strong typing, implementation models; control structures: sequencing, selection, repetition, subprograms, exception handling, coroutines and concurrent units; functional programming. The course examines and compares existing languages such as FORTRAN, PASCAL, C, ALGOL 60, ALGOL 68, Ada, FL/1, Concurrent PASCAL, Simula 67, LISP, CLU, APL, and SNOBOL 4.

COM 1370 Computer Graphics **4 Q.H.**
(Prereq. COM 1201 and MTH 1301)

The course focuses on characteristics and programming of graphics output devices. Basics point and line drawing, two-dimensional displays, clipping and windowing. Pictures: data structures and display file organization. Interaction: graphical input and external events—operating system considerations. Some three-dimensional drawing will be included as time permits.

COM 1390 Analysis of Algorithms **4 Q.H.**
(Prereq. COM 1201, MTH 1125, MTH 1409 and MTH 1301)

This course introduces the basic principles and techniques of analyzing algorithms. Topics include algorithms on sorting, searching, graphs, and digraphs (such as minimal spanning tree, shortest path, depth-first search, components of a graph); methods involving string matching, polynomials and matrices. If time permits, fast Fourier transform and the concept of N P-complete problems.

COM 1410 Artificial Intelligence **4 Q.H.**
(Prereq. COM 1102, COM 1201 and MTH 1409)

This course focuses on analysis of current computer algorithms dealing with problems such as theorem proving, chess playing, general problem solvers, robotics, symbolic computation, perceptions, self-reproducing automatated parallel machines.

COM 1600 Computer Science Project **4 Q.H.**
(Prereq. Permission of the instructor. May be repeated for credit.)

A course for those who wish to develop a special software project with the assistance of a member of the faculty.

COM 1620 Computer Science Seminar **4 Q.H.**
(Prereq. Computer science seniors only)
(This course superceded by COM 1621 as of academic year 1988-89.)

This course acts as a "capstone" course for computer science majors. Meetings are held once or twice per week and a current topic or problem in computer science is presented by an expert in the subject matter. Students are assigned additional questions and/or problems to research in the topic area as an aid to their developing a deeper appreciation and understanding of various aspects of computer science.

COM 1800 Directed Study in Computer Science**4 Q.H.**

(Prereq. Permission of the instructor. May be repeated for credit.)

Programs of directed study, held one or more quarters, are available for highly motivated students who wish to explore special topics in com-

puter science in depth. Directed study can be used as an opportunity to examine familiar material in fresh ways or to explore new material that is not offered in formal courses. It is hoped that directed study programs will provide students strong in computer science and related sciences a chance to develop the art and skill needed to work independently and creatively in computer science.

Engineering Technology

Chemical Engineering Technology

CHT 1381 Nuclear Technology**4 Q.H.***

(Prereq. MTH 1195 and PHY 1196)

Atomic and nuclear structure, discovery and nature of radioactivity-clear reactions and energy-induced nuclear transformations, neutron properties, applications of radio nuclides. Radiological safety nuclear instrumentation for particle detection, monitoring, and experimentation. The fission process and its applications; nuclear reactors—their classification, design, and application, nuclear fuel processing, radioactive waste disposal. Supplementary laboratory experiments.

Computer Technology

CT 1105 Introduction to Programming**4 Q.H.**

A high-level structured language (PASCAL) will be taught and used as a vehicle for implementing program. Students will write and run programs using Northeastern's computer. Topics: using the Northeastern University computer, flow charting program construction, computations involving maxima and minima, arrays, simple recursion, subroutines.

CT 1310 FORTRAN**4 Q.H.**

(Prereq. CT 1105 or equiv.)

This important scientific language will be taught with engineering applications. Students will write and run FORTRAN programs using the Northeastern University computer. Topics: arithmetic replacement, input, output, control and specification statements, looping, arrays, functions and subroutines.

CT 1311 Programming with "C" Language**4 Q.H.**

(Prereq. CT 1105 or CT 4105)

Students will write programs in "C," a general purpose programming language useable for operating systems or numerical, text-processing and data-base programs. A basic knowledge of programming fundamentals is assumed. Topics will cover basic data types, operators and expressions, control flow (if-else, while, etc.), functions and program structure, external variables, scope rules, pointers, address arithmetic, structure and union, and the C I/O Library.

CT 1320 COBOL**4 Q.H.**

(Prereq. CT 1105 or equiv.)

This important business language will be taught with general applications. Student will write and run COBOL programs using the Northeastern University computer. Topics: divisions names rules, picture clauses, verbs, input/output instructions, levels, working storage, arithmetic, corresponding accept, display, compute, copy, undate logic, table logic, redefines, search, inline and COBOL sorts.

CT 1330 Nonnumerical Algorithms**4 Q.H.**

(Prereq. CT 1105)

Data, structures, storage, manipulation and retrieval methods. Students will write and run data manipulation programs using Northeastern's computer. Topics: stacks, queues, lists, trees, heaps, sets, graphs, searching, sorting, key processing, relational models.

CT 1335 Numerical Algorithms**4 Q.H.**

(Prereq. CT 1310)

Computer methods for solving mathematical problems. Students will write and run application programs using the Northeastern University computer. Topics: deterministic vs. stochastic methods, random-number generators, iterative vs. noniterative solutions, maxima and minima in two and three variables, curve fitting in two and three variables, integrals, trapezoidal and Simpson's rules, slopes, difference equations in two and three variables, vector and matrix algebra, simultaneous linear equations, nonlinear equations, permutations, and combinations.

CT 1340 Modern Programming Techniques**4 Q.H.**

(Prereq. CT 1105)

Structured methods for developing complex computer programs. Students will develop and write sections of complex programs. Students will run programs on the Northeastern computer. Topics: top down design, hierarchy diagrams, HIPO charts, composite design, structured analysis, team programming.

CT 1341 Basic Computer Organization 4 Q.H.
(Prereq. CT 1105)

Fundamental aspects of basic computer components. Topics: the functions and general operating characteristics of CPU's, primary/secondary and mass memory, controllers, printers, card readers, terminals. What an operating system does, scheduling, monitoring, spooling, paging, system programs, virtual memory, multiprogramming, multiprocessing.

CT 1342 Advanced Computer Organization 4 Q.H.
(Prereq. CT 1105)

The operating and performance characteristics of complex and special purpose components. Topics: how an operating system works, memory hierarchies, fiber optics, bubble memory, mass storage, computer networks, distributed processing, data flow, cache memory, associative memory, special purpose/parallel processors, system performance measures.

CT 1345 Assembly Language 4 Q.H.
(Prereq. CT 1105)

A typical microprocessor assembly language will be taught. Students will write and run homework problems using a microprocessor simulator package implemented on the Northeastern University computer. Topics: binary arithmetic, instruction sets, addressing modes, code conversion, subroutines, macros, I/O.

CT 1355 Micro Peripheral Hardware 4 Q.H.
(Prereq. CT 1375)

The elements of microprocessor peripheral hardware and its interfacing. Students will configure microprocessor systems using block diagrams showing relevant handshaking signals. Topics: serial and parallel I/O devices, DMA and interrupt control devices, bus arbitration, memory management units, counter timers as extensions of basic CPU functions.

CT 1356 Complex Peripheral Hardware 4 Q.H.
(Prereq. CT 1355)

The interfacing and implementation of special purpose hardware. Students will configure systems, using block diagrams showing relevant handshaking signals. Topics: virtual memory, rotating media, printers, terminals, bus extension concepts, co-processors.

CT 1360 Industry Software 4 Q.H.
(Prereq. CT 1342, CT 1310)

A survey of current commercial software packages and methods. Students will exercise commercial packages implemented on Northeastern's computer where applicable. Topics: specific packages and methods which vary from year to year to maintain currency. They will be drawn from the following general categories: data base management, scientific and statistical analysis, security and privacy, software assurance, and documentation.

CT 1365 Industry Hardware 4 Q.H.
(Prereq. CT 1356)

A survey of the latest industrial developments and trends in computer hardware. Conducted as a seminar.

CT 1368 Semiconductor Logic 4 Q.H.
(Prereq. EET 1152)

A detailed analysis of the bipolar and MOS transistors in saturated and cutoff condition and implementation of these concepts to form basic logic and decision-making circuits. Students will convert logical expressions into hardware configuration representations. Topics: Ebers-Moll modeling, PMOS, NMOS, CMOS construction, logic families.

CT 1369 Computer Logic 4 Q.H.
(Prereq. CT 1368)

An introduction to the hardware building blocks of general computers. Students will specify configurations of lower level components to achieve composite logical functions, e.g., construct a register from NAND gates. Topics: gates, flipflops, registers, decoders, ALUs, memory arrays.

CT 1374 Introduction to CPU Hardware 4 Q.H.
(Prereq. CT 1345 or equiv.)

The internal operation of a microprocessor CPU. A black box approach is used. Students purchase and keep individual single board computers for doing homework and simulation. Topics: registers and timing control, programmable gate arrays, array processors as CPU models.

CT 1375 CPU Hardware Architecture 4 Q.H.
(Prereq. CT 1374)

The performance characteristics of commercially available CPU's. Students will write code for 4-bit through 32-bit processors. Topics: the characteristics of 4004, 4008, 8080, Z80, Z800, 8086, 1802 F8 and 6800 processors, and how to use one processor in place of another. *Note:* the list of processors examined may vary from year to year to maintain currency.

CT 1380 Data Communication Methods 4 Q.H.
(Prereq. CT 1310)

Functional and operational aspects of data communication devices and software. A black box approach will be used. Topics: modems, control units, multiplexers, concentrators, front end processors, synchronous/asynchronous/half duplex/full duplex codes and procedures, Bisynch/SDLE/HDLC, BYTE and BIT protocols, protocols, error checking, point to point/multidrop/STAR/MESH/CLUSTER networks.

CT 1381 Operating Systems 4 Q.H.
(Prereq. CT 1351)

The basic principles of operating system implementation. Students write and run programs to exercise elements of the University's operating system when applicable. Topics: resource, mem-

ory, processor and device management commands and strategies, I/O programming, swapping, overlays, jobs and process scheduling, and other operating systems.

CT 1382 Computer Graphics Programming 4 Q.H.

(Prereq. CT 1310)

Students are introduced to generalized techniques for the computer plotting of 2- and 3-dimensional shapes. Students write and run programs using the University's computer and digital plotter. Topics: 2D transforms, 3D to 2D transforms, 3D transforms, surface representation, shading, character, curve fitting, graphic data structures.

CT 1383 Data Bases 4 Q.H.

(Prereq. CT 1330)

An introduction to data-base organization structure and management. Students write and run programs exemplifying techniques developed in class on the University's computer. Topics: access methods, attributes, indices, keys, querying, searching and matching, file sets, normal forms, random access.

CT 1384 Large System Assembly Languages 4 Q.H.

(Prereq. CT 1345)

Typical large computer system assembly languages. Students will write and run illustrative programs on the University's computer. Topics: edit and translate instructions, macro writing, program sectioning, linking, data representation, addressing, instruction formats in BAL and VAX-11 assembler languages.

CT 1385 Introduction to Simulation Programming 4 Q.H.

(Prereq. CT 1335)

Computer methods for solving simulated phenomena. Students will write and run programs implementing simulations specified by instructor. Students will not be responsible for the validity or evaluation of models except in simple cases. Topics: simple queues; multiserver queues; priorities, including first in first out, last in last out, and time aging of data; simple frequency distributions; use of SIMULA, GPSS, and standard Subroutine Library Routines.

CT 1386 Development System Hardware 4 Q.H.

(Prereq. CT 1375)

A study of the principal hardware capabilities and current trends in micro computer level system. Included are both single users and network-oriented system.

CT 1387 Bit Slice Micro Computers 4 Q.H.

(Prereq. CT 1355)

The epitome of hardware flexibility is represented by the bit slice CPU. Demonstrates the basic design ground rules common to this style of hardware design.

CT 1388 Micro Controllers 4 Q.H.

(Prereq. CT 1374)

The commercial segment of micro computers has been satisfied by a variety of single-chip 4-bit micro controllers. A detailed contrast/comparison will be done on several of these devices, including the IMS-1000, S2000, COPS, and PPS-4.

CT 1389 Single-Chip Microprocessors 4 Q.H.

(Prereq. CT 1374)

When small 6 bit intelligent devices are rewired in high volume, the single-chip microprocessor in the form of the 3870, 8084 Z8, and others comes into play. An understanding of the hardware limitations of single-chip system presents the basis for this subject material.

CT 1390 Special Problems in Computer Technology 4 Q.H.

Theoretical or experimental work under individual faculty supervision.

Electrical Engineering Technology

EET 1151 Circuit Analysis I 4 Q.H.

(Prereq. MTH 1193 and PHY 1193)

Topics include Ohm's law, Kirchhoff's current and voltage laws, equivalent resistances and sources, mesh and modal analysis, network theorems, two-port networks and power relations—all with respect to direct currents; energy storage, singularity functions, response of R, L, and C elements to singularities.

EET 1152 Circuit Analysis II 4 Q.H.

(Prereq. EET 1151)

Topics include complex algebra, phasors, frequency domain, mutual inductance, transformers, steady-state a-c theory, driving point and transfer impedances, power and energy in a-c circuits; Laplace transforms; partial fraction expansion; Laplace transform techniques applied to the solution of RLC networks.

EET 1310 Electrical Measurements 4 Q.H.

(Prereq. EET 1353)

The course covers standards of measurements; dimensional analysis; errors and measurement of dispersed data; discrete and continuous variables, binomial distribution, normal distribution; guaranteed error; methods of resistance measurements; digital voltmeters and analog-to-digital conversion; voltage references; potentiometers and a.c. bridges.

EET 1311 Electronics I 4 Q.H.

(Prereq. EET 1152)

Topics include semiconductor diodes and applications, transistor-biasing techniques, graphical analysis of basic amplifiers, d.c. and a.c. load lines.

EET 1312 Electronics II 4 Q.H.

(Prereq. EET 1311)

Topics include small-signal, low-frequency transistor models; gains and impedances at midband; frequency effects in transistor circuits; multistage circuits; transistors used as current sources.

EET 1313 Electronics III 4 Q.H.

(Prereq. EET 1312)

The course covers review of Bode plots, transistor circuits at low and high frequencies, feedback operational amplifiers, differential amplifiers, applications.

EET 1314 Pulse & Digital I 4 Q.H.

(Prereq. EET 1311)

The course covers switching characteristics of semiconductor devices; wave generation and shaping, using combinations of passive and integrated circuit components; comparators, hysteresis, and the dual ramp analog to digital converter-voltmeter circuits, voltage-to-frequency conversion.

EET 1315 Pulse & Digital II 4 Q.H.

(Prereq. EET 1314)

Topics include digital operations; logic statements and theorems; minimization of logic functions; logic gates and the characteristics of the integrated logic families; flip-flops, counters and registers; introduction to sequential circuit design; sample and hold circuits; analog to digital conversion.

EET 1317 Principles of Communication Systems I 4 Q.H.

(Prereq. EET 1313)

Topics include signal analysis using Fourier methods; noise in communication systems; frequency selective amplifiers, including wideband; transistor power amplifiers AF and RF; oscillators; signal sources and applications.

EET 1318 Principles of Communication Systems II 4 Q.H.

(Prereq. EET 1317)

The course covers basic theory of amplitude, frequency, phase and pulse code modulated systems; analysis of modulating and demodulating circuits; carrier systems using SSB; system block and level diagrams; logic control circuits in communication systems; modems.

EET 1319 Principles of Communication Systems III 4 Q.H.

(Prereq. EET 1318)

The course covers fundamentals of digital communications; sampling requirements; analog-to-digital conversion methods; system capacity and bandwidth; comparison of practical digital systems PAM, PCM, PFM, PWM; time and frequency division multiplexing; data decoding; selected examples from telemetry and computer links.

EET 1320 Electricity and Electronics I 4 Q.H.

(Prereq. MTH 1193 and PHY 1193)

The course covers introduction to circuit analysis, resistive networks, periodic excitation function, steady-state ac circuits; the physical foundations of electronics and the physical operation of electronic devices.

EET 1321 Electricity and Electronics II 4 Q.H.

(Prereq. EET 1320)

The course covers single-stage electronic circuits, magnetic circuits and transformers, electro-mechanical energy conversion, dc machines, ac machines.

EET 1323 Electronic Laboratory 2 Q.H.

(Prereq. EET 1312 or concurrently)

The course covers experiments dealing with laboratory equipment (meters and oscilloscopes) techniques; junction and field-effect transistor characteristic; vacuum and semi-conductor diodes; power supplies, including the regulated type; silicon-controlled rectifiers, resistance-coupled amplifiers using transistors, including feedback methods.

EET 1324 Circuits Laboratory I 2 Q.H.

(Prereq. EET 1151)

The course covers experiments in electronic circuit theory utilizing various measurement techniques. Instrumentation verification of circuit theorems; response of circuits to steps and impulses, oscilloscope theory and applications.

EET 1325 Circuits Laboratory II 2 Q.H.

(Prereq. EET 1324)

The course offers further experimentation in electrical circuits and measurement techniques. Experiments include response of circuits to steps and impulses, nonlinear devices, terminal characteristics of active devices, log modulus plots, network parameters and synthesis. Fourier analysis and synthesis.

EET 1327 Advanced Electronics Laboratory I 2 Q.H.

(Prereq. EET 1323)

The course covers experiments dealing with the use of oscilloscopes, the examination of transistor audio amplifiers, push-pull amplifiers, drivers, pulse and video amplifiers, transients and wave-shaping circuits, audio frequency oscillators, and the study of operational amplifiers.

EET 1328 Advanced Electronics Laboratory II 2 Q.H.

(Prereq. EET 1327)

The course covers experiments dealing with the modulation of a class C amplifier, the diode detector, basic timing circuits, RF and crystal oscillators, astable multivibrators, logic gates, flip-flops, binary adders, registers and counters; active filters, frequency modulation detectors, and analog-to-digital and digital-to-analog conversion.

EET 1329 Advanced Electronics Laboratory III 2 Q.H.

(Prereq. EET 1328)

Topics include spectral studies of FM and PM waves, amplitude limiters, the balanced modulators and single sideband generators; integrated circuit timers and monolithic random access memory; monolithic phase-locked loop as well as a series of microwave experiments and digital experiments.

EET 1330 Energy Conversion 4 Q.H.
(Prereq. EET 1152 and MTH 1195)

Topics include generalized theory of rotating energy conversion devices; steady-state operation of the multiply-excited direct-current machine; control of speed; special machines; transformers; steady-state considerations of induction and synchronous machines; generalized machine and circuit model; Laplace transform techniques applied to the analysis of dynamic operating modes of rotating machines.

EET 1337 Distributed Systems 4 Q.H.
(Prereq. MTH 1195 and PHY 1193)

Topics include radiation, transmission, and reception of electromagnetic waves; distributed-line constants and traveling waves of transmission lines; differential equations of the uniform line.

EET 1353 Circuits Analysis III 4 Q.H.
(Prereq. EET 1152)

The course covers application of differential equations to the solutions of linear, time-invariant electrical networks; introduction to singularity functions, convolution, and time-domain transient analysis; network topology and duality; introduction to the methods of transformation calculus and complex frequency concepts.

EET 1354 Circuits Analysis IV 4 Q.H.
(Prereq. EET 1353)

Topics include signal analysis in the frequency domain; Fourier series; Fourier and Laplace transform methods; a varied selection of circuit problems using Laplace transforms and related theorems.

EET 1360 Engineering Analysis I 4 Q.H.
(Prereq. MTH 1195, EET 1152)

The course covers linear algebra and its application to circuit equations; solution of linear differential equations, including an introduction to Laplace transforms.

EET 1362 Basic Power Systems I 4 Q.H.
(Prereq. EET 1354)

Topics include consideration of power transmission lines; line constants; current voltage and power relations; introduction to electric-power distribution loads, feeders, and substations; application of matrices.

EET 1363 Basic Power Systems II 4 Q.H.
(Prereq. EET 1362)

Topics include consideration of symmetrical and unsymmetrical faults; protective devices—application and coordination; power flow in electric circuits; steady-state power limitations of systems; voltage regulation theory and application.

EET 1364 Basic Power Systems III 4 Q.H.
(Prereq. EET 1363)

Topics include computer applications to power systems with emphasis on load-flow studies, basic ideas of systems planning, short-circuit studies, and system stability.

EET 1370 Digital Computers 4 Q.H.
(Prereq. EET 1311)

Introduction to digital computer design. Topics include general computer organization, number systems and number representations, design characteristics of major computer units, Boolean algebra applications to computer design.

EET 1371 Digital Computers II 4 Q.H.
(Prereq. EET 1370)

Examination of microprocessor architecture and organization. Study of the machine language and assembly coding of an industry-accepted microprocessor. A suitable topic from the current literature will be analyzed. Assembly language coding problems will be assigned.

EET 1377 Control Engineering I 4 Q.H.
(Prereq. EET 1354 and MTH 1195)

Topics include analysis of linear servomechanisms under both transient and steady-state conditions; signal flow graphs; Laplace transforms used in the formulation of block diagrams and transfer function.

EET 1378 Control Engineering II 4 Q.H.
(Prereq. EET 1377)

Topics include system stability; root locus techniques; treatment of Nyquist criteria and Bode diagram methods for systems evaluation.

EET 1390 Optical Instrumentation 4 Q.H.
(Prereq. MTH 1192 and PHY 1193)

The course focuses on telescopes, microscopes, etc., as optical system components. Includes magnification, aberrations, resolution criteria, photometry. Compatibility of system components and optimization of systems. The basic nonimage-forming systems used for analysis control and metrology.

EET 1399 Special Problems In Electrical Engineering Technology 4 Q.H.
(Prereq. Consent of department chairperson)

The course offers theoretical or experimental work under individual faculty supervision.

General Engineering Technology

GET 1100 Computer Programming for Engineering Technology 4 Q.H.

(Prereq.—or concurrently—MTH 1192)

Introduction to the use of computers in the solution of problems using FORTRAN on interactive terminals. Students write and run programs to compute sequences, averages, etc. Other capabilities of the FORTRAN language, including DO loops, subscripted variables and alphanumeric manipulation matrix algebra, and numerical methods.

GET 1170 Engineering Graphics I 4 Q.H.

The study of concepts and the development of skills to present and to analyze objects and systems used in design through the principles of graphical geometric constructions, orthographic projections (multi-view, two-dimensional drawings), and the design process. Axonometric drawing.

GET 1171 Engineering Graphics II 4 Q.H.

(Prereq. GET 1170)

Continuation of the study of concepts and the development of skills to present and to analyze objects and systems used in design including dimensioning, sectioning, threads, fasteners, assembly, and detail drawings as well as the design process. A design project.

GET 1172 Electrical Engineering Graphics 4 Q.H.

(Prereq. GET 1170)

Introduction to electronic graphics, including symbols, schematics, block and logic diagrams, production and cable drawings, military standards. A study of single and double-sided printed circuit layout, integrated circuits, electro-mechanical designs, and interconnection diagrams; graphical data presentation.

GET 1301 FORTRAN Engineering Computation 4 Q.H.

(Prereq. GET 1100)

Professional methods for solving engineering problems with FORTRAN. Student will write and run programs using the University's computer. Topics include subprograms, scientific software packages, solution of equations, data storage, reduction and display.

GET 1315 PASCAL (A Second Language) 4 Q.H.

(Prereq. GET 1100 or equiv.)

An introductory course in programming computers using the PASCAL language. Students will write and run programs using the University's computer facilities. This course may not be used as a technical elective in Computer Technology Program.

GET 1364 Kinematics 4 Q.H.

(Prereq. GET 1171, GET 1100, PHY 1191)

Study of four-bar linkages, sliders, etc., using orthogonal components of vectors, instantaneous centers, equivalent linkages, effective cranks, etc., emphasizing graphical solutions, including an introduction to the computer to enhance these concepts. Reverted and epicyclic gear trains are analyzed, as are cam displacement, velocity, and acceleration diagrams.

Mechanical Engineering Technology

MET 1301 Mechanics A 4 Q.H.

(Prereq. MTH 1193; or MTH 4120; PHY 1191 or PHY 4117)

Topics include forces, moments, couples, statics of particles and rigid bodies in two and three dimensions. Distributed forces: external and internal. First moments and centroids. Analysis of structures: trusses, frames, and machines.

MET 1302 Mechanics B 4 Q.H.

(Prereq. MET 1301 or MET 4301)

Topics include friction, second moments, and virtual work. Kinematics of particles; rectilinear and curvilinear motion of dynamic particles. Force, mass, and acceleration; work and energy.

MET 1303 Mechanics C 4 Q.H.

(Prereq. MET 1302 or MET 4302)

Topics include impulse and momentum of particles. Kinematics and dynamics of rigid bodies: force, mass, and acceleration. Dynamics of rigid bodies: work and energy, impulse and momentum. Introduction to mechanical vibration.

MET 1314 Stress Analysis A 4 Q.H.

(Prereq. MET 1301 or MET 4301)

Topics include axially loaded members; stress and strain, allowable stresses, factor of safety, temperature effects, indeterminate members; thin-walled pressure vessels; centric loading of bolted and welded connection; shear and moment in beams; eccentrically loaded connections; flexural and transverse shearing stresses in beams.

MET 1315 Stress Analysis B 4 Q.H.

(Prereq. MET 1314 or MET 4314)

Topics include determinate and indeterminate beam deflections and reactions by numerical and graphical integration and area moment methods; theorem of three moments. Torsional stresses and strains; power transmission; eccentric loads on struts, beams, riveted and welded joints; combined and principle stresses; Mohr's circle; theories of failure.

MET 1319 Mechanics 4 Q.H.

(Prereq. MTH 1193 and PHY 1191)

Kinematics of particles: rectilinear and curvilinear motion of dynamic particles. Force, mass, and acceleration; work and energy. Impulse and momentum of particles. Kinematics and dynamics

of rigid bodies: force, mass, and acceleration. Dynamics of rigid bodies: work and energy, impulse and momentum.

MET 1330 Mechanical Design A 4 Q.H.
(Prereq. MET 1315 or MET 4315; MET 1380 or MET 4380)

The course covers introduction to mechanical design, the design process, design factors, creativity, optimization, human factors, value engineering. These principles are discussed and developed through simple design projects. Principles of design, properties and selection of materials; stress concentrations; strength under combined stresses; theories of failure; impact and fluctuating and repeated loads.

MET 1331 Mechanical Design B 4 Q.H.
(Prereq. MET 1330 or MET 4330)

Topics include stresses; deformation and design of fasteners, screws, joints, springs, and bearings; lubrication and journal bearings. Stresses and power transmission of spur, bevel, and worm gear; shaft design; clutches and brakes.

MET 1340 Thermodynamics A 4 Q.H.
(Prereq. PHY 1192 or PHY 4118)

Topics include general theory of heat and matter, laws of thermodynamics, energy-transformation principles; availability of energy; properties and processes for pure substances and ideal gases. Thermodynamic properties and processes of liquids and vapors; tables and charts; mixtures of fluids; vapor cycles.

MET 1341 Thermodynamics B 4 Q.H.
(Prereq. MET 1340 or MET 4340)

The course covers theory of vapor engines and analysis of actual engine types using gas and vapor compression; internal combustion engines; theory of gas and vapor flow through orifices and nozzles; principles of gas compression; analysis of vapor compression; refrigeration systems; low-temperature refrigeration cycles; and absorption refrigeration systems.

MET 1342 Refrigeration and Air Conditioning 4 Q.H.

(Prereq. MET 1341 or MET 4341)

The course focuses on air conditioning principles, including psychometrics and heat pumps. Course covers calculation of heating and cooling loads in accordance with A.S.H.R.A.E. practices; principles of gas compression; analysis of vapor compression; refrigeration systems; low-temperature refrigeration cycles; and absorption refrigeration systems.

MET 1343 Heat Transfer 4 Q.H.
(Prereq. MET 1341 or MET 4341)

Topics include the primary modes of heat transfer; thermal conductivity; thermal conductance/resistance concept; thermal-electrical analogy; combined heat-transfer mechanisms; basic equations of conduction; analytical solutions of various

steady-state conduction problems. The course also covers dimensional analysis and similarity considerations; natural and forced convection; hydrodynamic and thermal boundary layers; black-body radiation; Kirchhoff's law; emissivity and absorptivity; radiation between simple bodies; numerical methods; log mean temperature differences; overall heat-transfer coefficients; heat exchanger effectiveness; tubular exchanger design; regenerative and evaporative heat exchangers, and heat-transfer engineering problems.

MET 1370 Fluid Mechanics A 4 Q.H.
(Prereq. MET 1302 or MET 4302)

Topics include hydrostatics, principles governing fluids at rest, pressure measurement; hydrostatic forces on submerged areas and objects; simple dams, fluids in moving vessels; hoop tension fluid flow in pipes under pressure; fluid energy, power, and friction loss; Bernoulli's Theorem, flow measurement.

MET 1371 Fluid Mechanics B 4 Q.H.
(Prereq. MET 1370 or MET 4370)

The course covers pipe networks and reservoir systems; flow in open channels; uniform flow; energy, friction loss, minor losses, velocity distribution, alternate stages of flow, critical flow; nonuniform flow; accelerated and retarded flow; hydraulic jump and waves.

MET 1380 Materials A 4 Q.H.
Lectures on fundamental metallic structures; general metallurgical information covering theoretical aspects of properties, testing, and failure of metals. Supplemented by visual aids. Lectures on alloying and hardening of metals, refinement of metals, equilibrium diagrams, characteristics of engineering metals, principles of metal fabrication.

MET 1390 Measurement & Analysis Lab.

2 Q.H.

(Prereq. MET 1314 or MET 4314; GET 1100 or GET 4100; MTH 1195 or MTH 4122; PHY 1193 or PHY 4119)

The course includes experimental procedures for the collection and analysis of data by graphics and numerical methods including computer applications, report writing that draws conclusions relative to accuracy, precision, true values, and measured values as they relate to basic mechanical measuring instruments for length, area, volume, specific gravity, pressure, temperature, and time as these parameters are utilized in making mechanical measurements.

MET 1391 Technology Lab A 2 Q.H.

(Prereq. MET 1390 or MET 4390; MET 1315 or MET 4315; MET 1380 or MET 4380; or concurrently)

The course includes experimental procedures to determine mechanical properties of materials under tensile, compressive, torsional, direct

shear, flexural, impact, fatigue, and creep loading conditions as they are affected by normal and abnormal environmental conditions; also as they are affected by homogeneity, non-homogeneity, isotropy, and non-isotropy.

MET 1392 Technology Lab B **2 Q.H.**
(Prereq. MET 1390 or MET 4390; MET 1370 or MET 4370; or concurrently)

The course includes experimental procedures to determine the physical properties of incompressible fluids and to measure the flow rates and velocities utilizing pilot tubes, orifice plates, venturii and weirs flow meters, U-tube differential manometers, and piezometers as the fluid flows through open channels, partially filled conduits, conduits under pressure, pipe networks, turbines and pumps.

MET 1393 Technology Lab C **2 Q.H.**
(Prereq. MET 1390 or MET 4390; MET 1341 or MET 4341; or concurrently)

The course covers basic thermodynamic relations; experimental procedures to examine the flow of compressible fluids and steam and the energy conversion of a fuel into a working substance and the related heat-transfer mechanisms. Operating characteristics of thermal generators, engines, and compressors.

MET 1394 Technology Lab D **2 Q.H.**
(Prereq. MET 1393 or MET 4393; MET 1341 or MET 4341; MET 1343 or MET 4343; or concurrently)

The course includes experimental procedures to examine the operating characteristics and efficiencies of internal combustion engines, brake horsepower, indicated horsepower, friction horsepower, mean effective pressure, fuel consumption, torque, ignition timing, manifold pressure, and compression ratios and internal engines as energy conversion systems; energy conversion of fuels.

MET 1395 Technology Lab E **2 Q.H.**
(Prereq. MET 1390 or MET 4390; MET 1342 or MET 4342, MET 1343 or MET 4343)

The course includes experimental, analytical, and design projects to examine refrigeration, air conditioning, and heating-pump cycles.

MET 1396 Machine Shop **4 Q.H.**
Introduction to study of machines for metal processing, cutting tools, and fluids; machinability, automatic machinery.

MET 1414 Mechanical Vibrations **4 Q.H.**
(Prereq. MET 1303, MET 4303)

Elements of vibrating systems; one degree of freedom (undamped free and forced vibration from Newton's law of motion and energy methods), natural frequencies; damped free and forced vibration; impedance and mobility; systems with more than one degree of freedom; influence coefficients, Lagrange's equations, generalized coordinates, vibration absorber.

MET 1415 Experimental Stress Analysis **4 Q.H.**
(Prereq. MET 1315 or MET 4315)

Theory and experimentation showing the application of extensometers and electrical strain gauges as transducers in the field of experimental stress and strain analysis. Theory and laboratory practice on photoelastic methods as applied to classical model analysis and modern coating analysis.

MET 1416 Stress Analysis C **4 Q.H.**
(Prereq. MET 1315 or MET 4315)

Topics include curved beam, asymmetrical bending of beams, shear-center and shear stresses on thin sections, composite beams; columns energy absorption and resilience, inertial stresses, impact loading, deflection of beams by energy methods.

MET 1444 Power Generation **4 Q.H.**
(Prereq. MET 1341 or MET 4341)

Topics include basic power generation cycles; gas turbine cycles; effects of combustor temperature, intercooling, etc., on cycle performance; Rankine regenerative cycles, effects of steam temperature, pressure, number of feedwater heaters, etc., upon performance; steam generation equipment: boilers reactors.

The course also covers fossil fuel characteristics and effects on boiler design; combustion analysis; draft calculations, axial and centrifugal fan performance characteristics; pump design and performance consideration; heat-exchanger design considerations.

The course also includes applications of principles of economics to cycle and performance considerations use of load curves; economic considerations of heat rate; economics of equipment selection; study of auxiliary equipment such as precipitators and flue-gas desulfurization systems.

MET 1481 Materials B **4 Q.H.**
(Prereq. MET 1380 or MET 4380)

The course focuses on the study of inorganic materials (polymers, glasses, ceramics, cements, wood), and materials having important electrical and magnetic properties. A summary of the most recent applications for the fabrication and uses of both metals and nonmetals. Structures of metals, imperfections, phase diagrams effect of temperature on structure and properties of metals (annealing, recrystallization, recovery, precipitation, diffusion) strengthening mechanisms, mechanical properties of nonferrous metals. Laboratory: experiments in preparation of samples, selection, polishing, and etching; examination of nonferrous metals, use of the microscope, linear analysis construction of cooling curves, and simple binary-phase diagrams.

MET 1482 Applied Metallurgy **4 Q.H.**
(Prereq. MET 1481 or MET 4481)

Lectures include mechanical properties of ferrous metals; the iron-carbon diagram; high-temperature alloys, hardening methods, impact

tests, effects of environment on metals. Manufacturing processes: methods of fabrication, limitations on the use of different materials and their processing, casting, welding, cutting, drawing, powder metallurgy. Laboratory: includes experiments on analysis of stress-strain diagrams of iron and steel, heat treatment of steels, surface corrosion, tempering and drawing, use of metallograph and analysis of the results. Experiments in cold

rolling, swagging, drawing of nonferrous metals, and analysis of the results. Tension, shear, fatigue, and machinability tests on ferrous metals.

MET 1499 Special Problems In Mechanical Engineering Technology 4 Q.H.
(Prereq. Consent of department chairperson)
Theoretical or experimental work under individual faculty supervision.

African-American Studies

AFR 1100 Introduction to African-American Studies 4 Q.H.

The course touches on several of the possible historical, sociological, cultural, and political avenues of study in the broad interdisciplinary spectrum of African-American Studies. It is intended to help provide an introductory overview of the field and will offer students the opportunity to identify areas for more specific focus.

AFR 1115 Epidemiology of Black Diseases 4 Q.H.

Students are introduced to the science of epidemiology, the study of the occurrence of disease in populations. The concepts, principles, and methods of epidemiological analysis are explored, with emphasis on specific diseases occurring with greater frequency in urban and black populations, such as cardiovascular conditions, sickle cell disease, and certain occupational and environmental illnesses.

AFR 1127 African-American Literature I 4 Q.H.

The course offers a survey of African-American literature from the period of slavery to the present, with an emphasis on literature concerning the relation between the rise of the black American and the development of African-American literature. The black experience as it is revealed in literature will be important in the discussion.

AFR 1131 African-American History I 4 Q.H.

This survey covers the development of black America from the period of slavery through Reconstruction, with emphasis on the historical links between Africa and America and their impact on black development in the United States.

AFR 1132 African-American History II 4 Q.H. (Prereq. AFR 1131 or permission of instructor)

This course examines the development of black America from Reconstruction to the present, and the effects of events in the United States and world history on the development of black America. There is special emphasis on contemporary issues and how these issues can be seen through a historical perspective.

AFC 1133 History of Blacks in the Media and the Press 4 Q.H.

The course offers a historical and visual examination of the development of the African-American

experience in the American mass media and press. Contemporary and historical literature, films, and people are a part of the study and analysis with respect to history, racism, images, psychology, and social movements. Newspapers, film, television, and radio are prime focal points, and they are used to help form strategies for the future of black Americans.

AFR 1141 Education Issues and Minority Communities I 4 Q.H.

This course focuses on some of the important issues in today's urban elementary and secondary education systems. The analysis will look at the historical development of these issues, and students will be encouraged to think about and discuss their future significance.

AFR 1150 Black Cultural Development in the United States 4 Q.H.

The course focuses on the rise of a distinctive black culture in the United States, with emphasis on examining the premise that the black population in America has developed a cultural system that operates as a subsystem of the American cultural norm.

AFR 1151 Survey of African-American Art 4 Q.H.

Black art, like black literature, has always been an important aesthetic social statement by the African-American artist. This course offers a historical and critical examination of African-American art from the nineteenth century to the present, with special emphasis on the effects of European and African art styles on the black artist in America.

AFR 1153 Survey of African-American Music 4 Q.H.

Black music has evolved in fascinating ways over the past hundred years. Topics include the impact of African rhythm on black music, the New Orleans coalescence, regional development, ragtime, the emergence of large bands, the harmonic revolution of the '40s, bebop, the 1960s avant-garde, and subsequent developments. Some analysis of specific jazz phenomena is included.

AFR 1161 Economic Issues in Minority Communities 4 Q.H.

Minority lifestyles, perspectives, self-images and social position in the urban community are all

affected by economic factors, especially those specific to the minority poor. Students have the opportunity to examine these issues, particularly in terms of the application of basic economic theories to the economic realities of minority communities.

AFR 1171 Survey of Contemporary Black Political Movements 4 Q.H.

The modern black political movements were inspired by a full-scale evolution of black political thought in America. Analysis of this evolution examines socio-political contests that have served as catalysts to these modern movements.

AFR 1191 African Civilization I 4 Q.H.

This course deals with the ancient empires of Africa, especially Ghana, Songhai, Mali, Zimbabwe, the city states of East Africa, and also the Congo Kingdom. Included are Ethiopian as well as Egyptian history and the controversies surrounding their histories to 1800.

AFR 1193 Africa Today 4 Q.H.

With increasing numbers of nations striving for economic and political control in Africa, and with imperialist and colonial ideas remaining in the living memory of Africans, Africa presents a complex political and social picture to the rest of the world. This course examines some of the salient features of black art, politics, and identity in Africa.

AFR 1195 Identity and Nationalism In Africa 4 Q.H.

How have centuries of imperialism, the struggle for national unity, and the continuing problems of racism and rivalry between factions affected the present identities and nationalist movements in Africa? This course explores problems peculiar to Africa and to any group of nations struggling against colonial ideas. Tribalism and the effects of European colonial partition on African identity are discussed.

AFR 1196 The Black Experience in the Caribbean 4 Q.H.

The course offers a descriptive and interpretive analysis of the growth of the modern black community in the Caribbean. Although the focus will be on the contemporary period, the course will examine that period in the context of colonialism and slavery in the Americas. Important racial, social political economic, and religious issues will be addressed.

AFR 1211 African-Americans in Science, Technology, and Medicine 4 Q.H.

The course studies the contributions that African-Americans have made to the development of science and technology in America. It examines the cultural and social factors that have encouraged blacks to work in the fields of science (biology, chemistry, physics) and technology (engineering and medicine). Certification of blacks within the American scientific community and the availability

of science to the past and contemporary African-American communities are also explored. Readings, discussions, individual research topics, and interviews with black scientists, inventors/engineers, and doctors are used to develop the basic course material.

AFR 1214 Poverty and Health Care 4 Q.H.

Why do the poor fail to get good health care? The course discusses problems of the poor and will examine the entire health care system, including Blue Cross and Blue Shield, Medicare and Medicaid, National Health Insurance, low-income barriers to health care, and future directions of medical health care.

AFR 1220 The Black Novel 4 Q.H.

The black novelist belongs to a unique literary group in the history of American fiction. Special attention is given to Chesnutt, Toomer, Wright, Ellison, and contemporary novelists, and to their different perceptions of the black experience in America.

AFR 1223 Black Poetry 4 Q.H.

Black poetry has been an important describer of the black experience in American thought through three centuries. This course will survey the black American poet from colonial times to the present. Special attention will be given to major poets and the influences that shaped their works.

AFR 1235 Black History of Boston 4 Q.H.

This course examines the social, economic, political, and educational history of Boston's black community in the nineteenth and twentieth centuries. The development of the black community and its institutions is a major focus, and students are encouraged to study the past in an attempt to understand the present and interpret the future. Research data include participant observation, oral history, interviews, and primary and secondary source materials.

AFR 1240 Contemporary Issues in Black Society 4 Q.H.

This course offers an introduction to the various issues and problems that confront black Americans, including some of the realities of the social, political, and economic problems of contemporary black experience. Students are asked to assess the validity of specific social theories in relation to the black experience.

AFR 1241 The Black Family 4 Q.H.

How does the black family function, both interpersonally and as a social unit? Anthropological and sociological theories deal with variations in family structure and the function of the black family in black society. The effects of slavery and colonization on the black family structure and functions are also explored. A side issue is a discussion of some of the differences and similarities between African, African-American, and African-Caribbean families.

AFR 1248 Race Relations in America 4 Q.H.

The course offers an examination of the interrelations of ethnic, cultural, and minority groups in the United States. Focus is on the nature of racial conflicts, discrimination, reverse discrimination, personal and institutional racism, and racial and ethnic stereotyping. Discussion considers avenues of improvement in attitude awareness and change.

AFR 1251 Survey of Black Theatre and Drama 4 Q.H.

Theatre in America has been an important reflector of the national experience, and black theatre, especially in recent years, has served the same purpose for the black community. The course focuses on the development of black drama during the nineteenth and twentieth centuries, with emphasis on modern developments and their political and cultural significance.

AFR 1261 The Economics of Urban Poverty 4 Q.H.

Like most Americans and people from around the world, blacks migrated to central cities in America to better their economic conditions. However, unlike other migrants to urban centers, they were not assimilated into the social/economic mainstream, and there is evidence of flagrant job, housing, and educational discrimination against them even during periods of affluence. During recession or depression, their problems were compounded. Students have the opportunity to survey the above events from an economic framework.

AFR 1274 Black Political Behavior 4 Q.H.

The course provides an introductory examination of the social and psychological dynamics of black political participation. Main issues of the course include identity and political socialization and their impact on black voter turnout and partisan choices.

AFR 1280 Black Psychological Identity 4 Q.H.

So much is said of stereotyping in news, on television programs, and in literature. The shaping of the black identity over three centuries in America is a complicated and perhaps even elusive problem. This course will look at the impact of slavery, racism, war, and poverty on the evolution of the black identity in America.

AFR 1294 Third World Political Relations 4 Q.H.

This course offers a comparative regional analysis of the political systems of third world nations of Africa, Asia, Latin America, and the Caribbean. Emphasis on development strategies; problems of development, including national identity, political socialization and participation, national defense, and urbanization; and the positions of third world nations in the international community.

AFR 1297 Caribbean History 4 Q.H.

A descriptive analysis of the development of the Caribbean from slavery to the present. The focus will be on the period 1918-1962 especially, and emphasis will be on the historical analysis of the relationship of the Caribbean with the United States and black Americans.

AFR 1300-AFR 1311 Directed Study 4 Q.H.

Directed study offers the ambitious student the opportunity to pursue a special intellectual interest not covered by the department course offerings and to work on this interest with the department faculty member of his/her choice. The faculty member will closely supervise the project and act as adviser for the duration of the quarter.

AFR 1350 Research Seminar 4 Q.H.

This course is divided into three parts, providing students the opportunity, first, to identify a substantive area of their concern (e.g., welfare, political leadership, education) and to define a related problem in a research context; second, to be supervised in designing a research methodology most appropriate for examining the problem area; and third, to conduct extensive research, test the hypothesis, and draw conclusions based on data analysis techniques.

AFR 1355 Directed Study for Senior Thesis 4 Q.H.

(Prereq. Permission of instructor)
The senior thesis is required of all African-American Studies majors; it offers students the opportunity to prepare a professional research paper under the close supervision of a scholar interested in students' particular research areas.

AFR 1360 Field Research Seminar 4 Q.H.

(Prereq. Permission of instructor)
Seniors have the opportunity to work with a faculty member on an individual basis, while carrying out a particular research project off-campus. Students are required to refine and polish a topic and outline for the senior thesis.

AFR 1380 Junior-Senior Honors Program 4 Q.H.

For details contact the Honors Office, 183 Holmes.

AFR 1401 History of East Africa 4 Q.H.

The first section of the course deals with the pre-colonial period and the problems of the partition of Africa. The second section focuses on the classical colonial period and the transformations of colonial policy after World War II, with particular emphasis on the ambiguity of decolonization and those features of the colonial system that seem to have become a part of the East African social and political environment.

AFR 1403 History of West Africa**4 Q.H.**

The history of West Africa has included the struggle for internal unity, economic development, and social justice. The Pan-Africanist ideology, W.E.B. DuBois's writings, African socialism, and the consolidation of power and leadership are some of the topical objectives in this study of African liberation, particularly the rise of West Africa.

AFR 1405 History of South Africa**4 Q.H.**

(Prereq. AFR 1491 or permission of instructor)

Initial attention is directed toward pre-colonial South Africa and the conflict between Africans and the Dutch and English settlers. The course then focuses on the formation and transformation of colonial policy after World War II, with particular emphasis on racism, neo-colonialism, liberation movements, and international involvement in the apartheid system.

AFR 1421 African-American Literature II**4 Q.H.**

(Prereq. AFR 1121 or permission of instructor)

This course continues the survey of African-American literature; its primary focus, however, is on principal writers and their major themes.

AFR 1431 Analysis of the Slavery System in America**4 Q.H.**

This course attempts a comprehensive survey of the realities of the slavery system in America, with focus on the impact of slavery on blacks as well as on the society that perpetrated the system. Examination of slave narratives and other historical documents will provide insights into the origin of the slavery system and the way it functioned until the Emancipation Proclamation.

AFR 1432 Analysis of Comparative Slavery**4 Q.H.**

Slavery has had major psychological effects on the shaping of the black American experience, as well as on the experience of blacks throughout the world. An analysis of the sociological implications of slavery on group interrelations, social norms, and cultural aberrations covers several national versions of the slave system in Africa, Europe, the Caribbean, and North and South America.

AFR 1440 Racial Integration and its Impact on Education**4 Q.H.**

This course offers an examination of the historical struggle for desegregation. This course analyzes current urban issues in racial integration and some of the projected effects of integration.

AFR 1446 The Black Elderly in America**4 Q.H.**

This course will survey the demographic characteristics of black elderly Americans compared with those characteristics of white elderly. These statistics include age, sex, educational levels, income levels, occupations, sources of income, as well as the study and comparison of certain social characteristics of black and white elderly. These will include the use of their time relationships with

primary and extended family groups, and their own view of the history of their lives as black people in America. They will also give students a perspective of what they envision the future of blacks will be in the social and economic life of America. Students will be expected to devise a questionnaire, interview senior citizens, and write a paper based on this information.

AFR 1448 Religion in Black American Society**4 Q.H.**

Black life in America cannot be fully understood without a sense of the importance of religion in the community. This course looks at the impact of religion on social structures, group behaviors, moral codes, and belief patterns in black society. Topics include the church as a social organizer, the role of the black minister in the community, and the variety of black denominations in urban and rural areas.

AFR 1449 Junior-Senior Honors**4 Q.H.**

For details contact the Honors Office, 183 Holmes.

AFR 1451 Seminar: Creative Expression in Blues and Jazz**4 Q.H.**

Blues and jazz have been among the most far-reaching and original artistic expressions of blacks in America. The course touches on possible African sources of inspiration for the musical literature of blues and jazz; a more important focus, however, is on blues and jazz as a reflection of African-American life and on the impact these musical forms have had on black self-image and position in American culture.

AFR 1470 Black Political Thought**4 Q.H.**

How do the black people as a unit view the American political system and black people's chances of improving their lot in this country? This course examines black opinions, from the radical to the ultra-conservative, of the United States political system. The focus is historical in context and will address notions of political socialization and the development of black political ideologies.

AFR 1471 Seminar: Black Political Leadership**4 Q.H.**

(Prereq. AFR 1171 or consent of instructor)

This course will focus on several prominent black political leaders in the twentieth century, with an examination of the factors and social contexts which contributed to or thwarted their leadership. Students will be expected to conduct extensive research on a particular black political leader and present a critical analysis of the impact of that political leader on the black community.

AFR 1475 Public Policy Analysis**4 Q.H.**

The course analyzes the dynamics of the public policy formation process at the local, national, and international levels, with particular attention to the implications of public policy for minority groups. Emphasis is placed on a critique of the policy maker's role and power in the socio-economic setting.

AFR 1480 Black Man/Black Woman 4 Q.H.
Sociological and anthropological methods are used to examine black male and female personality development as well as the development of black male and female behavior, self-image, sexual roles, and behavior within both the black and the white communities.

AFR 1491 African Civilization II 4 Q.H.
(Prereq. AFR 1191 or permission of instructor)
This course on African civilization covers the period from 1800 to the present era. Emphasis will be placed on the relation between Europe and Africa, the circumstances surrounding the imperialist partition of Africa, and the decolonization process.

INT 1201 An Analysis of American Racism 4 Q.H.
This seminar in contemporary aspects of racism in America discusses the cycle by which racism in our institutions helps form our attitudes and the manner in which our attitudes, in turn, shape our institutions. Emphasis is on the practical, day-to-day aspects of racism, rather than the theoretical and historical.

The following courses may be of interest to the student wishing to concentrate in African-American Studies. Descriptions for these courses may be found in the appropriate department listing.

PHL 1100 Introduction to Philosophy

PHL 1140 Social and Political Philosophy

PHL 1243 Existentialism

PHL 1335 Moral Philosophy

POL 1303 Political Behavior

POL 1317 Law and Society

POL 1320 Political Parties and Pressure Groups

POL 1342 Government and Politics in Africa

POL 1354 The Politics and Policies of Developing Nations

POL 1360 The Politics of Revolution and Change

POL 1362 Civil Liberties

POL 1370 Political Theory

POL 1378 Contemporary Political Thought

POL 1386 International Law

SOA 1345 Urban Anthropology

SOA 1355 Political Anthropology

SOA 1360 Economic Anthropology

SOC 1147 Urban Society

SOC 1170 Race and Ethnic Relations

SOC 1310 Class, Power, and Social Change

Art and Architecture

ART 1100 History of Art to 1400 4 Q.H.
The course provides a survey of Western art from prehistoric times to the Renaissance.

ART 1101 History of Art since 1400 4 Q.H.
The course provides a survey of Western art from the Renaissance to the twentieth century.

ART 1106 Introduction to Art 4 Q.H.
The course offers a basic introduction to the characteristics of the visual arts, including painting, sculpture, graphic arts, and architecture. Various examples of works of art are studied as an introduction to style and technique. Course includes visits to museum collections and contemporary art galleries.[†]

ART 1111 Introduction to Architecture 4 Q.H.
The course offers a survey of the stylistic characteristics of architecture from ancient times to the present.

ART 1113 Architecture and the City 4 Q.H.
This course provides a selective examination of Western architecture in the context of the urban environments that produced it. Special attention is paid to the cultural and social forces which shaped this architecture of the cities.

ART 1115 Art and Society 4 Q.H.
The course offers an examination of the way in which societal forces and political ideologies are expressed in the visual arts, especially in painting and architecture. The course combines a broad overview of a few significant historical periods with a more focused concentration on the past two hundred years.

ART 1124 Basic Drawing 4 Q.H.
The focus of the course is on basic drawing in pen and ink, pencil, charcoal, brush, and related media. Course includes fundamentals of form, volume, and texture in drawing.

ART 1127 Basic Painting 4 Q.H.
This is an introductory studio course in the fundamental techniques of painting. Formal problems in the study of color, light, space systems, form, and composition establish the foundation for more individual creative expression. Critiques and slide lectures are used as needed.

ART 1130 Foundations of Visual Design 4 Q.H.
An introductory studio course clarifying basic principles, language, and concepts inherent in visual language systems. Utilizing both two- and

[†]Satisfies Core Curriculum Category II requirement.

three-dimensional media including photography, students will explore such fundamental concepts as composition, dimensional relationships, effects of color, pictorial and literal space and form, repetition, structure, figure/ground relationships, balance and unity. By working out abstract concepts in concrete hands-on studio projects, students will gain valuable insights into fundamental visual ideas that relate all visual art forms.

ART 1132 Graphic Design I 4 Q.H.

An introductory studio course in the fundamental principles of graphic design. Assigned projects and lectures in design elements and their application include: the creative use of color, value, line, shape and form, layout, layout techniques and tools, typography, design concepts and symbols, and the correlation of graphic expression and organization with copy content in communicating ideas.

ART 1138 Introduction to Printmaking 4 Q.H.

A hands-on course dealing with the methods and techniques of etching, drypoint, and calligraphy. Students will experiment with the processes of line etching, aquatint, soft/hard ground and paper relief prints as they develop an image. Slide presentations of prints will be shown each week.

ART 1150 Introduction to Architectural Design 4 Q.H.

An introduction to fundamental design principles and their application to the built environment. Lectures, two- and three-dimensional design projects, and field trips.

ART 1160 Basic Photography I 4 Q.H.*

The course is intended to acquaint the beginning student with the use of the camera, the negative, and the print. Weekly shooting assignments, demonstrations, and hands-on lab experience are part of this active, primary-level course.

ART 1170 Filmmaking Workshop 4 Q.H.

This is an introductory course in the creative use of the film medium. Emphasis will be placed on weekly lab assignments designed to develop skills in the fundamental techniques of filmmaking. A final film project expressing an original idea in film form will be required of each student. Film screenings, lectures, and critiques. Equipment will be provided by the department.

ART 1200 Ancient Art and Architecture 4 Q.H.

This course offers an overview of the painting, sculpture, and architecture of Ancient Egypt, Mesopotamia, Greece, and Rome, with special emphasis on the historical forces that shaped them.

ART 1203 Medieval Art and Architecture 4 Q.H.

The course focuses on Romanesque and Gothic art and architecture from the tenth to the fifteenth centuries.

ART 1204 Renaissance Art and Architecture 4 Q.H.

The course focuses on Italian painting, sculpture, and architecture of the fifteenth and sixteenth centuries, with special reference to the historical and social forces that shaped them.

ART 1210 French Painting 4 Q.H.

The course examines French painting of the nineteenth century, focusing on romanticism, realism, impressionism, and their cultural implications.

ART 1213 Modern Painting 4 Q.H.

The course provides a survey of twentieth-century painting, including major schools such as impressionism, cubism, surrealism, and expressionism. Course includes visits to museum collections and contemporary art galleries.

ART 1217 History of Marine Painting 4 Q.H.

A study of the image of the sea as used by various painters. The work of such artists as Turner, Delacroix, Monet, Rembrandt, and many others will be examined stylistically within a historical context.

ART 1220 American Sculpture and Painting 4 Q.H.

A survey of major developments in American sculpture and painting from colonial times to the present. This course emphasizes stylistic considerations and influences affecting the development of these art forms.

ART 1223 American Architecture 4 Q.H.

This course provides a survey of major developments in American architecture from colonial times to the present, with emphasis on stylistic developments and influences affecting architectural directions in America.

ART 1225 Technology, Architecture, and the City 4 Q.H.

The course examines the role technology and architecture played in shaping the built environment of the American city, with special emphasis on Chicago, New York, and Boston. The course also investigates the effects of physical planning, especially urban renewal and the recycling of older buildings.

ART 1228 Contemporary Architecture and the City 4 Q.H.

The course is a study of the great figures and chief movements of American and European architecture and city planning of the twentieth century.

ART 1230 History of Photography 4 Q.H.

The course offers a study of the development of photography from the early nineteenth century to the present.

ART 1233 Contemporary Directions in Photography 4 Q.H.

A slide/lecture course designed to acquaint the student with trends in twentieth-century photography.

*Lab fee required.

phy. Photojournalism, documentary, commercial, and creative photography will be examined closely in relation to other communication media.

ART 1235 History of Film 4 Q.H.*

This course offers an introductory historical survey of the development of film as an art form from the late nineteenth-century handcolored silent films to the contemporary international movements. Lectures, screenings, and discussions.

ART 1236 The American Film 4 Q.H.*

A historical survey of the unique rise of the American film and its influence on a burgeoning new international art form. Key films representing major aesthetic or technical developments from the late nineteenth century to the present are screened weekly and discussed.

ART 1237 Contemporary Directions in Cinema 4 Q.H.*

The course offers a comparative study of selected films by major contemporary directors. Film screenings, discussions, assigned readings, and lectures.

ART 1238 Documentary Film 4 Q.H.*

The course offers a study of the aesthetics and tradition of the documentary film, with a major emphasis on contemporary directions.

ART 1240 History of Graphic Design 4 Q.H.

An historical survey of graphic design from the mid-nineteenth century to the present. The course will focus on the evolutionary development of graphic design, its special nature and function, major periods and trends, the historical influence of the fine arts, and contemporary directions in design evident today. Slide lectures and discussions.

ART 1243 Graphic Design II 4 Q.H.

A continuation and reinforcement of the fundamental practices and principles of good design with a special emphasis on developing overall design concepts. Students will explore the inherent problems in designing public graphic systems, exhibit graphics, corporate and institutional graphics, promotional and technical literature graphics, and develop skills in effective problem-solving techniques and concept development methodology.

ART 1250 Color Theory and Practice 4 Q.H.

A project-oriented course exploring the nature and properties of color, major color theories, color harmonies, the spatial characteristics of color, color and light, the psychology of color, color symbolism, color orchestration, and the pragmatic creative application of color in image-making generally, and design specifically.

ART 1254 Intermediate Drawing 4 Q.H.

The main focus of this course is to heighten the student's understanding of spatial awareness, scale movement, and expression. Students will be

asked to create unusual environmental situations for their figurative compositions. A variety of media will be used, including wash, pen and ink, watercolor, chalk, charcoal, and pencil.

ART 1261 Basic Photography II 4 Q.H.*
(Prereq. ART 1160 or equiv.)

A continuation of ART 1160 with more emphasis on combining personal aesthetic choices with refining darkroom skills. A final portfolio at the end of the course as well as weekly shooting assignments are required.

ART 1263 Introduction to Color Photography 4 Q.H.

This course will cover basic color theory as well as contemporary photographic processes and practices. Student work with color slides will be emphasized, printing from color slides and negatives will be demonstrated, and limited printing facilities provided for student use.

ART 1271 Animation Workshop 4 Q.H.

An introductory course in the creative possibilities of the animated film. Weekly lab assignments and a final project will acquaint students with various animation techniques and the creative advantages of each. Film screenings, lectures, and critiques. Equipment supplied by the department.

ART 1310 Seminar in Modern Art and Architecture 4 Q.H.

(Prereq. One course in post-Renaissance art history or permission.)
The course explores selected topics in modern art and/or architecture.

ART 1320 Late Nineteenth-Century American Architecture 4 Q.H.

(Prereq. ART 220 or ART 223, or permission.)
The course offers a study of the "stick and shingle" architectural styles, as well as more general developments. Introductory lectures are followed by student presentations on selected topics.

ART 1363 Intermediate Photography Workshop 4 Q.H.*

(Prereq. ART 1261 or equiv.)
Through close interaction with the teacher, students are asked to refine their technical skills and to make meaningful decisions about their relation to the world around them through the use of black and white photography. Alternative processes and large formats as well as frequent slide presentations of contemporary photography will combine together to form a base for a course stressing individual direction and a qualitative approach to substantive photography.

ART 1800, ART 1801, ART 1802 Directed Study (each) 4 Q.H.

These courses offer independent work under the direction of members of the Department on a chosen topic. Limited to qualified junior and senior students majoring in art, with approval of the department.

ART 1810, ART 1811, ART 1812 Junior-Senior Honors Program (each) 4 Q.H.

For details contact the Honors Office, 183 Holmes.

INT 1100 Introduction to Art, Drama, and Music 4 Q.H.

This interdisciplinary course offers an integrated approach to three related disciplines: art, drama, and music. Basic vocabulary and analytical techniques are established for each discipline, empha-

sizing such common elements as color, line, rhythm, texture, and form. Representative works from various periods are examined in the context of the cultures that produced them, and lectures focus on parallels and contrasts among the three disciplines' manifestations of specific trends, principles, and ideals. Lectures, readings, and listening assignments are supplemented by visits to art galleries and attendance at concerts and theatrical performances.†

American Sign Language

ASL 1101 American Sign Language I 4 Q.H.

An introduction to American Sign Language and Deaf culture, this course focuses on frequently used signs, basic rules of grammar, nonmanual aspects of ASL, and some cultural features of the Deaf Community.

ASL 1102 American Sign Language II 4 Q.H.

(Prereq. ASL 1101 or permission of instructor)

A continuation of basic language and culture study, this course offers an opportunity to build receptive and expressive sign vocabulary. Study includes use of the signing space; further use of nonmanual components, including facial expression and body postures. Introduction to finger spelling.

ASL 1201 Intermediate American Sign Language I 4 Q.H.

(Prereq. ASL 1102 or permission of instructor)

This course emphasizes further development of receptive and expressive skills, finger spelling, vocabulary building, grammatical structures; encourages more creative use of expression, classifiers, body postures, and the signing space; introduces regional and ethnic sign variations and political and educational institutions of the Deaf Community.

ASL 1202 Intermediate American Sign Language II 4 Q.H.

(Prereq. ASL 1201 or permission of instructor)

The course consists of intensive practice involving expressive and receptive skills in story telling and dialogue; introduction to language forms used in ASL poetry and to the features of culture as they are displayed in art and the theatre.

ASL 1211 Deaf Culture 4 Q.H.

(Prereq. ASL 1101)

Course focuses on the status of Deaf people as a linguistic and cultural minority group. Topics include the role of American Sign Language in the Deaf Community; educational and historical perspectives on deafness; and sociological and cultural make-up of the Deaf Community.

ASL 1212 Deaf History 4 Q.H.

A survey of the history of Deaf people in the Western world, with emphasis on the American Deaf

Community, their language, education, and relationship to hearing society.

ASL 1401 American Sign Language Literature 4 Q.H.

Various genres of American Sign Language will be read and discussed in ASL. This course will concentrate on the work of current, recognized narrators in both literary and face-to-face storytelling traditions, and will also include selected autobiographical sketches, lectures, stories, and letters from the early 1900s by such historical figures as Clerc, Veditz, E.M. Gallaudet, and others. A videotaped research essay in ASL will be required at the end of the course.

ASL 1501 Sign Language Interpreting I 4 Q.H.

(Prereq. LNI 1401 or permission of instructor)

This is the first of a three-course sequence involving the theoretical and practical aspects of simultaneous interpretation of English into sign language and vice versa. Through lectures, discussions, and role playing, students are introduced to ethics, definitions, client-interpreter relationships, linguistic considerations, mechanics, and special considerations for various interpreting situations.

ASL 1502 Sign Language Interpreting II 4 Q.H.

(Prereq. ASL 1501 or consent of instructor)

Lectures, discussions, and role playing emphasize topics that include ethics, roles, fees, and Registry of Interpreters for the Deaf (R.I.D.) certification procedure. Laboratory work focuses on increasing skills in simultaneously interpreting English to sign language and vice versa.

ASL 1503 Sign Language Interpreting III 4 Q.H.

(Prereq. ASL 1502 or consent of instructor)

This course is designed for students who have completed the equivalent of Sign Language Interpreting I and II and wish to upgrade their skills. Laboratory work focuses on interpreting ASL into English and vice versa, and transliterating spoken English into manual English.

†Satisfies Core Curriculum Category II requirement.

ASL 1504 Methods and Materials in American Sign Language Instruction 4 Q.H.
(Prereq. ASL 1202, PSY 1363)

This course offers a study of the theories of second-language learning and teaching as applied to ASL, and existing approaches to ASL instruction, with focus on materials, activity selection, utilization and selection of instructional media, and evaluation techniques.

Biology

For specific information about terms during which courses are offered, students should inquire at the main office of the Biology Department, 403 Richards Hall. This is especially the case for students wishing to carry a minor in biology, since some courses acceptable only for a minor do not appear in the quarterly Elective Course Selection booklets. Students should note that courses are presented by category and are not listed in a single numerical sequence.

The following courses are primarily for students with little or no background in college science and mathematics. These courses are not open to biology majors.

BIO 1110 Organic Evolution 4 Q.H.
(Not open to biology majors)

The course focuses on the major features of organic evolution, with emphasis on vertebrate evolution, genetics, and physical influences.

BIO 1111 Environment and Man 4 Q.H.
(Not open to biology majors)

The course offers an ecological analysis of man's inter-reaction with other organisms. The necessary foundation of biological principles is presented.

BIO 1150 Human Anatomy I and Physiology I 5 Q.H.
(Not open to biology majors)

The course focuses on cellular and tissue structure and function, followed by anatomical terminology. Topics include histology, anatomy, and physiology of bones, muscles, blood, and nervous systems. The laboratory includes a study of human bones, cat dissection, and related histology.

BIO 1151 Human Anatomy II and Physiology II 5 Q.H.*
(Not open to biology majors)

(Prereq. BIO 1150)
The course covers anatomy and physiology of the respiratory, digestive, urogenital, and circulatory systems; physiology of endocrine system; a brief exploration of the anatomy and physiology of eye and ear. The laboratory includes studies of muscle and nerve physiology, blood physiology and histology, and physiology of respiration.

ASL 1801, ASL 1802, ASL 1803, ASL 1804, ASL 1805 Directed Studies (each) 4 Q.H.

Directed Studies offer students an opportunity to go beyond course work of the regular curriculum or to pursue an individual learning project. May take the form of research, practicum, or language development activity.

BIO 1170 Marine Biology 4 Q.H.
(Not open to biology majors)

The course provides an introduction to marine life with an emphasis on that of New England shores, and includes concepts of life cycles, adaptation of organisms, productivity, disturbance effects due to pollution and/or man and how they interrelate.

BIO 1141 Basic Animal Biology II 4 Q.H.
(Prereq. BIO 1140; not open to biology majors)

The course offers systematic, comparative study of the structure and functions of animals. Diversity of animals is considered from the standpoint of evolutionary adaptation. Laboratory.

BIO 1181 The Human Organism 4 Q.H.*
(Not open to biology majors)

This course, designed for nonscience majors, provides an introduction to the structure and function of the human body. Emphasis is on the principles of biological and physical science as they relate to life processes in health and disease. Laboratory experiments explore the workings of the students' own biological systems rather than those of other animals.

The following courses are primarily for students majoring in science- or health-related professions or other majors (nonbiology) with equivalent background in college science and mathematics. These courses are not open to biology majors.

BIO 1112 Ecological Principles 3 Q.H.
(Prereq. Nonbiology science majors or engineering majors)

Identical to BIO 1211, but without lab. Not open to biology majors.

BIO 1120 Basic Microbiology 4 Q.H.
(Prereq. BIO 1140, or permission of instructor; not open to biology majors)

Microbial life, emphasizing morphological characteristics, physiological activities, and disease production. Laboratory.

*Lab fee required.

BIO 1121 Introductory Microbiology 3 Q.H.

(Not open to biology majors)

Similar to BIO 1120, but without laboratory.

BIO 1140 Basic Animal Biology I 4 Q.H.*

(Not open to biology majors)

The course covers principles of biology; universal properties and processes of living organisms as exemplified by the cell and its activities; inheritance evolution; and environmental relationships. Laboratory.

BIO 1141 Basic Animal Biology II 4 Q.H.

(Prereq. BIO 1140; not open to biology majors)

The course offers systematic, comparative study of the structure and functions of animals. Diversity of animals is considered from the standpoint of evolutionary adaptation. Laboratory.

BIO 1183 Human Biology 3 Q.H.

(Not open to biology majors)

General biological principles applied to and illustrated by the human species; human cellular structure and basic metabolic processes; human genetics, human reproduction, human evolution, human ecology and interactions with other species of plants and animals.

BIO 1187 Biology of Human Reproduction 4 Q.H.

(Not open to biology majors)

The course covers structure and function of male and female reproductive systems; factors affecting sexual development, fertility, and reproductive behavior in the human species; physiology of coitus, fertilization, pregnancy, birth, and lactation; methods of controlling fertility.

BIO 1221 General Microbiology 3 Q.H.

(Prereq. Permission of instructor; or CHM 1265, BIO 1260, and BIO 1261; required courses may be taken concurrently)

Same as BIO 1320, but without laboratory. Not applicable for the biology major or graduate credit.

BIO 1253 Human Physiology I 4 Q.H.*

(Prereq. BIO 1106 and BIO 1107; not open to biology majors)

The course offers study of the physiology of excitable cells and tissues; nerve and muscle synapses, muscular contraction, neuromuscular reflexes, autonomic nervous system, endocrinology, sensory physiology, and higher nervous function.

BIO 1254 Human Physiology II 4 Q.H.*

(Prereq. BIO 1253; not open to biology majors)

The course offers study of respiration and circulation: fluids, the heart, cardiovascular regulatory mechanisms and metabolism, gastrointestinal function, renal function. Laboratory.

BIO 1255 Human Anatomy 4 Q.H.*

(Not open to biology majors)

The course focuses on the structure and development of the human body. Laboratory.

Courses primarily for biology majors or for other students with equivalent background in college science and mathematics. Freshmen intending to major in biology should take the sequence BIO 1103 to BIO 1105.

BIO 1103 Principles of Biology I 5 Q.H.*

An introduction to the basic principles of biology, the course endeavors to provide an information base for the remainder of the biology core. Topics include scientific method; growth; development; elementary genetics; nutrition; photosynthesis; and respiration. Special emphasis is placed on the role of plants in the biological world. Laboratory.

BIO 1104 Principles of Biology II 5 Q.H.*

(Prereq. BIO 1103)

Topics include cellular metabolism, molecular mechanisms of microbial life, structure and general physiology of animal cells, and evolution of adaptive diversity among invertebrate animals. Laboratory.

BIO 1105 Principles of Biology III 5 Q.H.*

(Prereq. BIO 1103 and BIO 1104)

The course covers discussion of the structure and function of vertebrate animals, including the human species; introduction to the various systems of the body, illustrated with laboratory experiments and animal dissection.

BIO 1106 General Biology 4 Q.H.*

The course focuses on universal properties and processes of living organisms. Topics include cellular composition and cellular control, the evolutionary process, environmental relationships. Laboratory. (Normally not for freshman biology majors)

BIO 1107 Animal Biology 4 Q.H.*

(Prereq. BIO 1106)

The course offers a systematic comparative study of the structure and functions of animals. Diversity of animals is considered from the standpoint of evolutionary adaptation. Laboratory. (Normally not for freshman biology majors)

BIO 1133 Plant Biology 4 Q.H.*

(Prereq. BIO 1106-BIO 1107 or BIO 1103-BIO 1105)

The course offers an introduction to the structure of plant cells, structure and function of roots, stems, and leaves of flowering plants; survey of the major groups in the plant kingdom, including their morphology, reproductive biology, and economic importance. Laboratory.

BIO 1211 Environmental and Population Biology 4 Q.H.*

(Prereq. BIO 1107-BIO 1133 or BIO 1103-BIO 1105)

The course offers detailed consideration of the physico-chemical factors influencing and influenced by organisms. The course covers interactions among individual organisms and among species; change of species by genetic natural selection; development of communities and function of ecosystems. Laboratory.

*Lab fee required.

BIO 1258 Vertebrate Physiology I 4 Q.H.*
(Prereq. BIO 1106-BIO 1107 or BIO 1103-BIO 1105 and BIO 1261)

The course covers properties of living protoplasm; the general organization and function of cells; translocation of materials and the organization of animals; the physiology of the skeletal systems of humans and animals; the physiology of amoeboid, ciliary, and contractile movement with emphasis on muscle metabolism; the structure and function of neurons, reflex arcs, the autonomic nervous system, and the sensory receptors. Laboratory.

BIO 1259 Vertebrate Physiology II 4 Q.H.*
(Prereq. BIO 1258)

Topics include fluid media of animals, emphasizing water and electrolyte balance and kidney function in humans; the physiology of blood, including its formation, functions, clotting antigens, and tests for identifying blood; the physiology of the heart, nervous control of the vascular system, breathing and gas transport, heat regulation, nutrition, digestion and assimilation; the endocrine secretions; and the physiologic aspects of reproduction.

BIO 1260 Genetics and Development Biology 4 Q.H.*
(Prereq. BIO 1107-BIO 1133 or BIO 1103-BIO 1105 and CHM 1264)

Course focuses on elaboration of the classic laws of heredity, cytogenetics, molecular basis of heredity, and selected examples of the development of form and function. Laboratory.

BIO 1261 Cell Physiology and Biochemistry 4 Q.H.*
(Prereq. BIO 1107 or BIO 1103-BIO 1105 and BIO 1260, CHM 1265, and CHM 1221)

Topics include basic chemical and physical enzyme kinetics; processes of cells related to their fine structure; oxidative and intermediary metabolism; photosynthesis, membrane phenomena; chemical and physical processes of prokaryotic and eukaryotic cells. Laboratory.

BIO 1311 Evolution 4 Q.H.*
(Prereq. BIO 1107 or BIO 1103-BIO 1105 and BIO 1260)

This is a basic evolutionary course for biology majors and graduate students offering a survey of evolutionary history, evidence, mechanisms, and theories. Topics of current interest in evolution are emphasized.

BIO 1320 General Microbiology 5 Q.H.*
(Prereq. Permission of instructor; or CHM 1265, BIO 1260, or BIO 1261; required courses may be taken concurrently)

The course provides morphological, ecological, and biochemical consideration of representative groups of bacteria; introduction to virology and microbial genetics; host-parasite relationships, including basic immunological considerations; pro-

karyotes of medical significance; physical and chemical controls of microbial growth. Laboratory.

BIO 1328 The Microbial World 4 Q.H.*
(Prereq. BIO 1211 and CHM 1264)

The course offers study of the position, structure, and function of microorganisms in the natural world, and their utilization by humans from the perspective of their major physiological properties. Laboratory.

BIO 1329 Marine and Fresh Water Microbiology I 2 Q.H.*
(Prereq. BIO 1320)

The course examines methodological approaches to the study of the aquatic environment. Ship-board sampling and relevant field trips augment laboratory studies.

BIO 1330 Marine Botany 4 Q.H.*

Subjects covered include taxonomy of the major groups of marine plants, primarily algae; their ecological and reproductive strategies and their economic importance; and their roles in diverse marine communities. Mandatory field trips in addition to laboratory studies.

BIO 1341 Vertebrate Zoology 4 Q.H.*
(Prereq. BIO 1107 or BIO 1105 and BIO 1211)

Lectures emphasize the systematics, natural history, zoogeography, and behavior of all classes of vertebrates. The laboratory consists of identification of preserved specimens and mandatory field and museum trips.

BIO 1347 Embryology 5 Q.H.*
(Prereq. BIO 1107 or BIO 1105 and BIO 1260)

Topics include gametogenesis, fertilization, cleavage, gastrulation, induction, organogenesis, and metamorphosis in vertebrates. Emphasis is on frog, chick, and pig in the laboratory.

BIO 1348 Animal Histology 4 Q.H.*
(Prereq. BIO 1131)

The course offers microscopic study of fundamental types of animal tissues. Laboratory.

BIO 1351 Comparative Vertebrate Anatomy 5 Q.H.*
(Prereq. BIO 1107 or BIO 1105)

The course focuses on morphology and phylogeny of the vertebrates; laboratory studies on taxonomy of the group and specific morphology of the dogfish shark, the mud puppy, the alligator, and the cat.

BIO 1370 Marine Invertebrate Zoology 5 Q.H.*
(Prereq. BIO 1107 or BIO 1105)

Topics include functional morphology, systematics, ecology, and phylogenetic relationships of the major invertebrate phyla. Emphasis in laboratory is on utilization of living marine forms, with dissection of representative organisms.

BIO 1401 Historical Technique 3 Q.H.*

(Prereq. BIO 1107 or BIO 1105 and BIO 1261)

The course provides instruction in general methods of tissue preparation for purposes of microscopic study; preparation of solutions and stains; the microtome and its operation, together with specific directions for fixation, clearing, hardening, embedding, section-cutting, and staining tissues. Laboratory.

BIO 1411 Tropical Terrestrial Ecosystems**3 Q.H.**

(Prereq. two years of college biology)

A field and lecture course to introduce students to the plants, animals, and ecosystems of terrestrial Jamaica.

BIO 1420 Microbial Physiology 4 Q.H.*

(Prereq. BIO 1320 or equiv.)

The course focuses on structure and function of the bacterial cell, with emphasis on its general properties as well as on the physical and chemical factors that influence it. Laboratory.

BIO 1421 Medical Virology 4 Q.H.*

(Prereq. BIO 1320)

The course examines fundamental characteristics of animal viruses with emphasis on pathogenesis, clinical pathology, and epidemiology of the common viral diseases, including the tumor viruses and the slow viral diseases. Laboratory sessions focus on methods of working with animals, eggs, and cell cultures in isolating, cultivating, and identifying viruses.

BIO 1427 Medical Microbiology 4 Q.H.*

(Prereq. BIO 1320 or equiv.)

Topics include host parasite interactions: virulence, toxins, natural flora, immunological responses; characteristics of the common bacterial, rickettsial, and protozoal infections in humans; epidemiology, pathology, vaccines, and chemotherapy.

BIO 1429 Marine and Fresh Water Microbiology II 2 Q.H.*

(Prereq. BIO 1320)

The course focuses on characterization and differentiation of aquatic micro-organisms. Topics include microbial associations in marine, estuarine, and fresh water habitats. Morphology, physiology, and ecology are stressed.

BIO 1430 Introduction to Plant Physiology**4 Q.H.***

(Prereq. BIO 1133 or BIO 1105 and BIO 1261, or permission of instructor)

The course focuses on the physiology and biochemistry of plants as a whole and at the cellular and organ levels. Considerations of mineral and nutrition, photosynthesis, hormones, growth, and development are included. Attendance at a weekly four-hour lab, as well as preparation of a paper based on the research literature, as required.

BIO 1431 Lower Plants**4 Q.H.***

(Prereq. BIO 1133 or BIO 1105)

The course offers study of nonvascular plants (algae, fungi, lichens, mosses, and liverworts), including their morphology, ultrastructure, ecology, life cycles, reproductive strategies, and economic uses. Laboratory.

BIO 1432 Higher Plants**4 Q.H.***

(Prereq. BIO 1133 or BIO 1105))

The course offers study of vascular plants (club mosses, ferns, gymnosperms, and angiosperms). Origin, ecology, development, structure, paleobotanical evidence, reproductive strategies, and economic uses. Field trips included. Laboratory.

BIO 1437 Plant Anatomy**4 Q.H.***

(Prereq. BIO 1133 or BIO 1105)

The course focuses on comparative developmental anatomy of seed plants. Laboratory.

BIO 1438 Local Flora**4 Q.H.***

(Prereq. BIO 1133 or BIO 1105)

The course provides a study of local vascular flora (ferns, gymnosperms, and angiosperms), with emphasis on recognition and appreciation of plant family characteristics. Preparation of herbarium specimens is presented. Field trip attendance is required. Laboratory.

BIO 1439 Economic Botany**4 Q.H.***

(Prereq. BIO 1133, or BIO 1103-BIO 1105)

The course offers an in-depth study of the association of plants and men. Subjects include food, beverage, drug, fiber, and medicinal products and crops, both historically and in present-day usage. Laboratory includes making of several plant products (paper, dried fruit, beer, etc.) as well as tours of a brewery, wholesale grocers, ethnic markets, sugar factory, and other places as time permits.

BIO 1440 Advanced Invertebrate Zoology**4 Q.H.**

(Prereq. Two years of college biology)

A lecture, field, and laboratory course that concentrates on one or two phyla. Subject varies from year to year, depending upon expertise of available faculty. An individual research project is required.

BIO 1441 Parasitology**4 Q.H.***

(Prereq. BIO 1107 or BIO 1105 and BIO 1261)

The course focuses on symbiotic relationships of protozoans, mesozoans, flatworms, nematodes, acanthocephalans, and arthropods. Laboratory.

BIO 1442 Vertebrate Paleontology**4 Q.H.***

(Prereq. BIO 1107 or BIO 1105, BIO 1211, BIO 1260; or permission of instructor)

The course examines evolution of the vertebrates, including humans, as revealed through the fossil record. Laboratory, museum, and field studies.

BIO 1447 Herpetology 4 Q.H.*

(Prereq. BIO 1107 or BIO 1105 and BIO 1260)

Lectures emphasize the natural history, behavior, systematics, and zoogeography of recent amphibians and reptiles. The laboratory consists of identification and preparation of preserved specimens, particularly local amphibians and reptiles. Mandatory field trips.

BIO 1448 Mammalogy 5 Q.H.*

(Prereq. BIO 1107 or BIO 1105 and BIO 1211)

The course offers study of phylogeny, anatomy, physiology, and natural history of mammals. Field collection, laboratory preparation, and study of specimens are included. Laboratory.

BIO 1451 Comparative Animal Physiology**4 Q.H.***

(Prereq. BIO 1107 or BIO 1105 and BIO 1261 or equiv.)

The course offers study of animal functions, their control, and their adaptiveness to various environments with consideration of phylogeny of these adaptations and of their underlying cellular mechanisms. Emphasis is on invertebrates and lower vertebrates, with comparisons to mammals. Laboratory.

BIO 1452 Comparative Neurobiology 4 Q.H.*

(Prereq. BIO 1261)

The course focuses on structure and function in simple invertebrate nervous systems. Topics include parallel conductance theory at endogenous and synaptic potentials, nerve networks, simple sensory and motor systems.

BIO 1457 Neuroethology**4 Q.H.**

(Prereq. BIO 1105)

A lecture, field, and laboratory course concentrating on the mechanisms underlying behavior of model invertebrates and lower invertebrates. The overall goal will be to develop a framework to explain behavior in terms of properties and connectivity of neuronal circuits. Topics to be covered include: the cellular biology of neurons and neuronal circuits, the organization of sensory and motor systems, and field and laboratory analysis of simple behaviors.

BIO 1460 Advanced Cell Biology 4 Q.H.*

(Prereq. BIO 1261 and physics)

The course examines selected topics in cellular structure and function of eukaryotes, e.g., their electrical and mechanical characteristics and the underlying physical and biochemical processes. Topics will vary depending upon the instructor. Laboratory.

BIO 1465 Introductory Immunology 3 Q.H.

(Prereq. BIO 1320 or equiv.)

The course covers basic consideration of the physical and chemical attributes of antigens and antibodies. Antigens of biological significance as well as *in vivo* antigen-antibody interactions are discussed.

BIO 1466 Immunology Laboratory 2 Q.H.*

(Prereq. BIO 1465 taken concurrently)

The course provides laboratory exercises dealing with immunization, quantitative antigen-antibody reactions, electrophoretic studies (agar, acrylamide gel, and cellulose acetate), immunofluorescence.

BIO 1457 Neuroethology**4 Q.H.**

(Prereq. BIO 1105)

A lecture, field, and laboratory course concentrating on the mechanisms underlying behavior of model invertebrates and lower invertebrates. The overall goal will be to develop a framework to explain behavior in terms of properties and connectivity of neuronal circuits. Topics to be covered include: the cellular biology of neurons and neuronal circuits, the organization of sensory and motor systems, and field and laboratory analysis of simple behaviors.

BIO 1460 Advanced Cell Biology**4 Q.H.***

(Prereq. BIO 1261 and physics)

The course examines selected topics in cellular structure and function of eukaryotes, e.g., their electrical and mechanical characteristics and the underlying physical and biochemical processes. Topics will vary depending upon the instructor. Laboratory.

BIO 1465 Introductory Immunology**3 Q.H.**

(Prereq. BIO 1320 or equiv.)

The course covers basic consideration of the physical and chemical attributes of antigens and antibodies. Antigens of biological significance as well as *in vivo* antigen-antibody interactions are discussed.

BIO 1466 Immunology Laboratory**2 Q.H.***

(Prereq. BIO 1465 taken concurrently)

The course provides laboratory exercises dealing with immunization, quantitative antigen-antibody reactions, electrophoretic studies (agar, acrylamide gel, and cellulose acetate), immunofluorescence.

BIO 1470 Coastal Biology (Oregon Coast)**4 Q.H.**

The first of a series of three courses intended to introduce the student to a wide range of coastal environments. This course includes studies of the open ocean, rocky intertidal areas, sandy beaches, and estuarine environments of the Oregon Coast. Basic biological principles will be demonstrated through comparative studies.

BIO 1471 Coastal Biology (Caribbean Coast)**4 Q.H.**

The second of a series of three courses intended to introduce the student to a wide range of coastal environments. This course includes studies of the open ocean, rocky intertidal areas, sandy beaches, and estuarine environments of the Caribbean. Basic biological principles will be demonstrated through comparative studies.

BIO 1472 Coastal Biology (New England Coast)**4 Q.H.**

The third of a series of three courses intended to introduce the student to a wide range of coastal environments. This course includes studies of the open ocean, rocky intertidal areas, sandy beaches, and estuarine environments of the New England Coast. Basic biological principles will be demonstrated through comparative studies.

BIO 1477 The Biology of Corals**4 Q.H.**

(Prereq. Two years of college biology)

A field, lecture, and laboratory course which concentrates on tropical cnidaria. The course will study the systematics, anatomy, physiology and ecology of this group of animals which assume such an important role in tropical marine ecosystems.

BIO 1478 The Biology of Fishes**5 Q.H.**

(Prereq. Two years of college biology)

A field, lecture, and laboratory course that examines the systematics, anatomy, behavior and ecology of fishes. Tropical forms are emphasized.

BIO 1479 Adaptations of Aquatic Organisms**4 Q.H.**

(Prereq. Two years of college biology)

An exploration of aquatic organisms through a study of their evolutionary responses to the aquatic habitat. The physical properties of water create physical constraints that have affected form, function, and behavior of all aquatic organisms. Density, viscosity, diffusion rates, pressure effects, and elementary fluid mechanics will be used to explain such characteristics as the body shape of larvae, hearing and sound production, suspension feeding, and buoyancy. Course includes lectures, laboratories, demonstrations, and individual research projects.

BIO 1490 Senior Seminar**1 Q.H.**

(Prereq. Completion of biology core, BIO 1103-BIO 1261)

The course examines recent developments in various topics of zoology, microbiology, physiology, botany, ecology, genetics, and cell biology. Student presentation and analysis are emphasized. Limited to qualified juniors and seniors in the B.A. program and required of seniors in the B.S. program.

BIO 1491, BIO 1492 Directed Study**(each) 2 Q.H.**

(Prereq. Completion of biology core, BIO 1103-BIO 1261)

The course offers independent work on a chosen topic under the direction of members of the department. Limited to qualified juniors and seniors with approval of the department and special arrangements with the supervising faculty member. The two quarters of this course together are counted as one elective course in the Biology Department.

BIO 1495, BIO 1496, BIO 1497, BIO 1498**Junior-Senior Honors Program (each) 4 Q.H.**

For details contact the Honors Office, 183 Holmes.

BIO 1580 Physical Chemistry with Biological Applications**4 Q.H.**

(Prereq. BIO 1236)

This course examines physiochemical principles as they apply to biological processes. Topics include chemical equilibria, reaction kinetics, basic thermodynamics, oxidation-reduction reactions, bioenergetics, macromolecules in solution, and transport. The approach is quantitative, and problem solving as a tool for learning is emphasized. Basic assumptions and limitations underlying principles are explained; for the most part, however, rigorous derivations are avoided. Applications to basic experimental techniques in biochemistry are made by way of relevant biochemical examples.

Chemistry

CHM 1101 General Chemistry**4 Q.H.**

This course examines topics of interest in inorganic chemistry for students in health-related majors. Topics include: atomic structure; energy changes in physical and chemical processes; stoichiometry; chemical bonding; gases, liquids, and solids; solutions; acids and bases. The emphasis is on how such ideas are related to the chemistry of the body.

CHM 1102 General Chemistry**4 Q.H.**

(Prereq. CHM 1101)

This course provides an introduction to organic substances of biological significance, and goes on to discuss the structure and reactions of proteins, carbohydrates, lipids, and nucleic acids as well as the major pathways of metabolism.

CHM 1104 Composition of the Oceans 4 Q.H.

Seawater, its nonliving components, and the changes they undergo during natural and technological activities. Principles illustrated include the structures of substances and solutions, dynamic equilibrium, nuclear and ionic reactions, and the dynamics of pollution, as they relate to the oceans. The course presupposes an exposure to chemistry in secondary school. The course is not recommended for students who have completed a college-level chemistry course and is not for students majoring in any science.

CHM 1111 General Chemistry 5 Q.H.*

This course, designed for nonchemistry majors, focuses on basic concepts and definitions; the mole concept and chemical stoichiometry, states of matter, solutions periodicity of elements, atomic structure, chemical bonding and reactions.†

CHM 1112 General Chemistry 5 Q.H.

(Prereq. CHM 1111)

This course, for students who will not be taking further chemistry, covers chemical equilibria; chemistry of compounds of biological relevance; introductory biochemistry or proteins, carbohydrates, lipids, and nucleic acids.

CHM 1122 General Chemistry 5 Q.H.*

(Prereq. CHM 1111)

For nonchemistry majors who will be taking CHM 1264, Organic Chemistry. Subjects covered include chemical kinetics and equilibria; acids and bases; elementary thermodynamics and kinetics; electrolysis and electrochemistry. †

CHM 1131 General Chemistry 4 Q.H.

Primarily for engineering students. Introduction to the principles of chemistry, focusing upon the states and structure of matter and chemical stoichiometry.

CHM 1132 General Chemistry 4 Q.H.

(Prereq. CHM 1131)

Primarily for engineering students, the course offers an introduction to the principles of chemistry, focusing upon chemical equilibria, the nature of some common materials, and energy considerations in chemical and nuclear transformations.

CHM 1138 General Chemistry Laboratory

1 Q.H.*

Optional laboratory for CHM 1132, General Chemistry for engineering students. Experiments pertaining to lecture material.

CHM 1141 General Chemistry 4 Q.H.

Similar to CHM 1151, but without laboratory. (Not available to majors from chemistry, biology, or pharmacy/allied health sciences.)

CHM 1142 General Chemistry 4 Q.H.

Similar to CHM 1152, but without laboratory. (Not available to majors from chemistry, biology, or pharmacy/allied health sciences.)

CHM 1151 General Chemistry 5 Q.H.*

For chemistry majors and selected students in other majors, such as biology, physics, etc. Course focuses on basic concepts and definitions, moles, gas laws, stoichiometry, atomic structure, periodic properties, chemical bonding.

CHM 1152 General Chemistry 5 Q.H.*

(Prereq. CHM 1151 or CHM 1141)

Topics include solutions, chemical kinetics, chemical equilibrium, chemical thermodynamics, electrochemistry, chemistry of the representative elements.

CHM 1153 The Chemical Elements 5 Q.H.*

(Prereq. CHM 1132, CHM 1122, CHM 1152, or equiv.)

For chemistry majors and selected students in other majors. The principal concepts of chemistry (thermodynamics, chemical bonding, kinetics) are applied to a systematic survey of the characteristic behavior of the chemical elements and their compounds.

CHM 1221 Analytical Chemistry 4 Q.H.*

(Prereq. CHM 1122 or equiv.)

For nonchemistry majors only. Theory and practice of gravimetric, volumetric, and selected instrumental methods of chemical analysis.

CHM 1223 Chemical Oceanography 4 Q.H.*

(Prereq. CHM 1132, CHM 1122, CHM 1152, or equiv.)

Chemical reactions and interactions in the marine environment. Methods and techniques of marine chemical investigation.

CHM 1231 Analytical Chemistry 5 Q.H.*

(Prereq. CHM 1122, CHM 1152, or equiv.)

For chemistry majors and selected students in other majors. Chemical equilibria, principles, methods, applications and data interpretation for classical and selected instrumental methods of chemical analysis.

CHM 1261 Organic Chemistry 4 Q.H.

(Prereq. CHM 1132)

For chemical engineering majors. Topics include compounds: preparation, properties, and reactions of the more common classes of open-chain compounds; electronic interpretation of structures and reactions; petrochemicals; synthetic resins; carbohydrates; fats; and proteins.

CHM 1262 Organic Chemistry 4 Q.H.*

(Prereq. CHM 1261)

Topics include aromatic compounds: preparation, properties, and reactions of the more common classes of aromatic compounds; electronic interpretation of structures and reactions of aromatic compounds; dyes, commercial solvents, and important industrial products. A brief introduction to alicyclic and heterocyclic compounds.

*Lab fee required.

†Satisfies Core Curriculum Category II requirement.

CHM 1264 Organic Chemistry 5 Q.H.*
(Prereq. CHM 1122, CHM 1152, or equiv.)

For nonchemistry majors. Course covers nomenclature, preparation, properties, and reactions of common organic compounds.

CHM 1265 Organic Chemistry 5 Q.H.*
(Prereq. CHM 1264)

Continuation of CHM 1264.

CHM 1271 Organic Chemistry 3 Q.H.
(Prereq. CHM 1153)

For chemistry majors and selected students in other majors. Course covers synthesis and properties of aliphatic and aromatic hydrocarbons and their functional derivatives; correlation between the structure of organic compounds and their physical and chemical properties; and electronic interpretation of organic reactions.

CHM 1272 Organic Chemistry 5 Q.H.*
(Prereq. CHM 1271)

Continuation of CHM 1271.

CHM 1273 Organic Chemistry 5 Q.H.*
(Prereq. CHM 1272) Continuation of CHM 1272.**CHM 1381 Physical Chemistry** 3 Q.H.
(Prereq. MTH 1223 or MTH 1243, PHY 1233 or PHY 1223, or equiv.)

Similar to CHM 1391, but without laboratory.

CHM 1382 Physical Chemistry 3 Q.H.
(Prereq. CHM 1391 or CHM 1381)

Similar to CHM 1381, but without laboratory.

CHM 1383 Physical Chemistry 3 Q.H.
(Prereq. CHM 1392 or CHM 1382)

Similar to CHM 1393, but without laboratory.

CHM 1391 Physical Chemistry 4 Q.H.*
(Prereq. MTH 1223 or MTH 1243, PHY 1233 or PHY 1223, or equiv.)

Chemical thermodynamics.

CHM 1392 Physical Chemistry 4 Q.H.
(Prereq. CHM 1391)

Topics include phase equilibria, solutions, kinetic theory of gases, chemical kinetics.

CHM 1393 Physical Chemistry 4 Q.H.*
(Prereq. MTH 1223 or MTH 1243, PHY 1233 or PHY 1223, or equiv.)

Course covers quantum chemistry, particles and waves, Schrodinger wave mechanics, the chemical bond.

CHM 1421 Instrumental Analysis 3 Q.H.
(Prereq. CHM 1221, CHM 1231, or equiv.)

For nonchemistry majors only. Similar to CHM 1431, but without laboratory.

CHM 1431 Instrumental Analysis 5 Q.H.*
(Prereq. CHM 1392 and CHM 1231)

Course focuses on principles, methods, and applications of selected topics in electrometric, chromatographic, and spectroscopic analysis.

CHM 1441 Inorganic Chemistry 4 Q.H.
(Prereq. CHM 1393)

Topics include atomic properties of free atoms and ions. Ionic bonding and the structure of the solid state. The Madelung calculation; the Born-Haber and other thermodynamic cycles. Valence-bond, molecular, orbital, and crystal field theories of bonding. Stereochemistry of compounds of representative elements. Electron-deficient compounds. Spectral and magnetic properties of transition metal compounds.

CHM 1461 Identification of Organic Compounds 3 Q.H.*

(Prereq. CHM 1265 or CHM 1273)

The course examines qualitative analysis of organic compounds and mixtures, using physical, chemical, and instrumental methods.

CHM 1501 Polymer Chemistry I 3 Q.H.
(Prereq. CHM 1273 or equiv.)

The course provides an introduction to polymers. Major emphasis on synthesis. Step-reaction, chain-reaction, and ring-opening polymerizations. Copolymerization. Three-dimensional polymers and cross-linking. Corresponds to graduate course CHM 3501.

CHM 1502 Polymer Chemistry II 3 Q.H.
(Prereq. CHM 1392 or equiv.)

Topics include physical chemistry of polymers in solution and bulk. Molecular characterization. Mechanical and physical properties in the glassy, rubbery, viscous, and semicrystalline states. Corresponds to graduate course CHM 3502.

CHM 1503 Polymer Chemistry III 3 Q.H.
(Prereq. CHM 1501 and CHM 1502)

Topics include industrial practice, polymer processing, fibers, elastomers, coatings, adhesives, reinforced plastics. Relation of polymer structure to usage. Corresponds to graduate course CHM 3503.

CHM 1521 Advanced Analytical Chemistry III 3 Q.H.

(Prereq. CHM 1431 or equiv.)

The course examines analytical separations. Corresponds to graduate course CHM 3521.

CHM 1523 Advanced Analytical Chemistry II 3 Q.H.

(Prereq. CHM 1431)

Electroanalytical. Corresponds to graduate course CHM 3523.

CHM 1525 Advanced Analytical Chemistry I 3 Q.H.

(Prereq. CHM 1431 or equiv.)

The course covers optical methods of analysis. Corresponds to graduate course CHM 3525.

CHM 1541 Advanced Inorganic Chemistry I**3 Q.H.**

(Prereq. CHM 1441)

The course covers application of quantum chemistry to inorganic systems. Corresponds to graduate course CHM 3541.

CHM 1542 Advanced Inorganic Chemistry II**3 Q.H.**

(Prereq. CHM 1541)

Continuation of CHM 1541. Corresponds to graduate course CHM 3542.

CHM 1543 Advanced Inorganic Chemistry III**3 Q.H.**

(Prereq. CHM 1542)

Chemistry of the solid state. Corresponds to graduate course CHM 3543.

CHM 1561 Advanced Organic Chemistry I**3 Q.H.**

(Prereq. CHM 1273 or CHM 1265)

Course focuses on organic structure and reactions. Corresponds to graduate course CHM 3561.

CHM 1562 Advanced Organic Chemistry II**3 Q.H.**

(Prereq. CHM 1561)

The course examines organic structure and reactions. Corresponds to graduate course CHM 3562.

CHM 1563 Advanced Organic Chemistry III**3 Q.H.**

(Prereq. CHM 1562)

The course focuses on organic structure and properties. Corresponds to graduate course CHM 3563.

CHM 1564 Spectrophotometric Identification of Organic Compounds**3 Q.H.**

(Prereq. CHM 1273 or equiv.)

The course examines spectrophotometric identification of organic compounds. Corresponds to graduate course CHM 3564.

CHM 1581 Advanced Physical Chemistry I**3 Q.H.**

(Prereq. CHM 1393)

The course examines chemical thermodynamics. Corresponds to graduate course CHM 3581.

CHM 1591 Advanced Physical Chemistry II**3 Q.H.**

(Prereq. CHM 1393)

The course focuses on atomic and molecular structure. Corresponds to graduate course CHM 3591.

CHM 1594 Advanced Physical Chemistry III**3 Q.H.**

(Prereq. CHM 1393)

The course focuses on chemical kinetics. Corresponds to graduate course CHM 3594.

CHM 1800, CHM 1801, CHM 1802, CHM 1803, CHM 1804, CHM 1805 Undergraduate Research (each) 4 Q.H.

For chemistry majors. The course offers original experimental work under the direction of a staff member. Participation may begin in the middler year and will normally continue through the senior year. A minimum of a two-quarter commitment is required for participation. Approval of the administering committee is required.

CHM 1810 Advanced Chemical Synthesis**3 Q.H.***

Special projects in the synthesis of organic and/or inorganic compounds.

CHM 1820 Advanced Chemical Measurements**3 Q.H.***

(Prereq. CHM 1393 and CHM 1431)

Laboratory problems in analytical and/or physical chemistry are examined.

CHM 1830 Special Topics**4 Q.H.**

(Prereq. CHM 1381)

CHM 1840, CHM 1841, CHM 1842, CHM 1843**Junior-Senior Honors Program (each) 4 Q.H.**

For details contact the Honors Office, 183 Holmes.

INT 1580 Physical Chemistry with Biological Applications**4 Q.H.**

(Prereq. BIO 1236)

This course examines physiochemical principles as they apply to biological processes. Topics include chemical equilibria, reaction kinetics, basic thermodynamics, oxidation-reduction reactions, bioenergetics, macromolecules in solution, and transport. The approach is quantitative, and problem solving as a tool for learning is emphasized. Basic assumptions and limitations underlying principles are explained; for the most part, however, rigorous derivations are avoided. Applications to basic experimental techniques in biochemistry are made by way of relevant biochemical examples.

*Lab fee required.

Theatre and Dance

DRA 1100 Introduction to Theatre Arts 4 Q.H. (For nondrama majors)

The course provides a brief view of the historical development of acting, directing, and production design. Emphasis is on appreciation of contemporary theatrical forms.

DRA 1106 Theatre History I 4 Q.H.

(This course is the first in a three-course sequence, although each course is self-contained and may be taken independently.) The history of world theatre and drama, including an examination of the characteristics of the drama and the nature of theatrical performance during each period, as well as the social and artistic contexts in which performance occurred. The periods examined this term are ancient Greece and Rome, medieval Europe, Elizabethan and Stuart England.

DRA 1107 Theatre History II 4 Q.H.

(This course is the second in a three-course sequence, although each course is self-contained and may be taken independently.) A continuation of Theatre History I. The periods examined this term are the Spanish Golden Age, the Italian renaissance, the theatre of baroque and eighteenth-century Europe, the rise of romanticism and realism in European theatre, and the theatre of Asia from its beginnings.

DRA 1108 Theatre History III 4 Q.H.

(This course is the third in a three-course sequence, although each course is self-contained and may be taken independently.) A continuation of Theatre History II. The course examines the rise of naturalism in the European theatre, the development of theatre in the United States, and the rise and development of modernism and post-modernism in American and European theatre.

DRA 1112 Drama Theory/Criticism 4 Q.H.

An examination of both the major historical statements of drama theory and contemporary drama criticism as evidenced in journalistic play reviews. Students are required to prepare reviews of local productions.

DRA 1116 The American Theatre 4 Q.H.

The course focuses on the American theatre from the Revolutionary War to the present.

DRA 1117 The Theatre of Williams, Miller, and Albee 4 Q.H.

The course offers an intensive study of the works of three major post-World War II American playwrights.

DRA 1118 Black Theatre in America 4 Q.H.

The course surveys the history of black theatre artists in America from the time of Ira Aldridge to the present day. Also examines the works of black

playwrights from the Harlem Renaissance to the present, with an emphasis on the period beginning with Baraka's "Dutchman."

DRA 1120 The Restoration Theatre 4 Q.H.

The philosophical, social, historical, and critical influences upon the Restoration theatre and its dramatists.

DRA 1121 Contemporary Theatre 4 Q.H.

The course examines the various forces that have shaped the major trends in Western theatre over the past two decades. The course includes a study and examination of contemporary theatre concerns covering topics such as women's rights, politics, race, nudity, and homosexuality, as presented in theatres or performed by experimental and avant-garde groups.

DRA 1122 Twentieth-Century European Theatre 4 Q.H.

An examination of major twentieth-century European attempts to break away from the nineteenth-century realistic tradition. Representative works of expressionistic, symbolistic, epic, and absurd theatre artists will be examined.

DRA 1123 The Theatre of Ibsen, Strindberg, and Chekhov 4 Q.H.

Intensive study of the theatre of the three great masters of the naturalistic movement in Europe whose works stand as the foundation of modern drama.

DRA 1124 The Irish Theatre 4 Q.H.

The course focuses on theatre and drama in Ireland from their beginnings to the present, with the backgrounds of Irish folklore and history. Particular emphasis on developments in the twentieth century.

DRA 1125 The Theatre of the Absurd 4 Q.H.

The course focuses on the theatre of the absurd as an anti-literary reflection of and reaction to life; its effects upon Western drama. Major concern with selected works and ideas of Jarry, Artaud, Camus, Sartre, Beckett, Genêt, Ionesco, Pinter, Kopit, Brown, and Arrabal.

DRA 1127 The Comic Theatre 4 Q.H.

The course focuses on the comic theatre from its beginnings in the ancient Greek theatre to its performances in contemporary theatre; an examination of the comic playwright, the comic actor, the comic director—the synthesizing of the arts of the theatre to produce thoughtful as well as titillating laughter. Included are study of scripts by such playwrights as Aristophanes, Molière, Shaw, Neil Simon; techniques of Charlie Chaplin, the Marx Brothers, stand-up comics. Directional devices will be examined through lecture, film, records, and attendance at live performances.

DRA 1130 Eastern European Theatre and Drama 4 Q.H.

A survey of the history of theatre and drama in Russia and Poland from the nineteenth century to the present. Emphasis will be placed upon the contributions of Polish romanticism, developments in the Soviet theatre of the 1920s, and on the work of major Polish and Russian dramatists and theatre artists who have influenced Western theatre profoundly. (Course taught in English.)

DRA 1140 Playwriting I 4 Q.H.

The principles and practices of modern dramatic composition: characterization, plot, plot structure, dialogue, and other dramaturgical elements as seen in the one-act play. Included are the writing of brief scenes, the dramatic composition, and the one-act play.

DRA 1150 Introduction to Acting 4 Q.H.

Fundamental techniques of stage use. The actor and the stage environment. Improvisations for strengthening imagination and increasing freedom. Analysis of scripts for work on performed scenes.

DRA 1155 Speech for the Theatre 4 Q.H.
(Prereq. SPC 1110)

The course focuses on special speech problems confronting actors performing in classical and contemporary theatre.

DRA 1160 Body Movement I 4 Q.H.

(Prereq. Drama major or permission of instructor) Students begin with simple Esalen physical awareness exercises, explore the warm-up process, and then try to find which exercises serve them best. Simple theatre games (i.e., machines, transformations, activity improvisations) are introduced, and students have the opportunity to learn how to relax through concentration on a specific mental task.

DRA 1170 Theatre Games 4 Q.H.

This course offers a variety of basic dramatic, movement, and improvisational techniques that can be applied to theatrical, educational, and personal situations. Previous theatrical experience is not necessary.

DRA 1180 Concepts of Direction 4 Q.H.

(Prereq. Drama major or permission of instructor) Theories of dramatic presentation through analysis of selected historical developments. Purposes and techniques of theatrical direction as they relate to script analysis, production style, pictorial composition, rhythmic evolution, and empathic responses.

DRA 1200 Stagecraft 4 Q.H.

Principles that underlie the coordination and execution of scenery for the stage; examination of

different kinds of scenery, tools, equipment, construction materials, and techniques; handling of scenery and basic scene painting. Laboratory work: constructing and painting scenery for University productions.

DRA 1209 Theatrical Drafting 4 Q.H.

By working on supervised classroom projects, the student is exposed to the basic graphic language needed to translate a designer's ideas into technical drawings used for construction. These basic skills can be used for future course work in design, University productions, and professional work.

DRA 1210 Scenic Design for the Stage 4 Q.H.
(Prereq. DRA 1200)

An introduction to the theory and practice of theatrical design and the role of the designer in the production process. Project work examines the use of the graphic tools—line, form, balance, colour, rhythm, etc.—in the development of the design idea. Emphasis is based on understanding and utilizing spatial relationships; visually expressing conceptual themes; and understanding the various uses, problems, and practical considerations of proscenium, thrust, and arena staging. Historical analysis covers production styles from the Greco-Roman period through the nineteenth century.

DRA 1212 Introduction to Theatrical Design 4 Q.H.

An introduction to the visual effects of modern theatrical production and the creative processes by which these come into being, through a basic survey of the three major design disciplines, their supporting technology, and their working interrelationship. The questions of how artistic concepts are developed and related, how they are communicated to other artists and an audience, and how one develops the critical processes necessary to evaluate these concepts will be addressed by the design faculty as applicable to their respective areas of expertise.

DRA 1213 Scene Design II: Principles 4 Q.H.
(Prereq. DRA 1210)

The development and expression of conceptual statements from specific dramatic texts through a series of exercises involving script analysis and introductory work in rendering and model construction. Texts to be examined are selected from works of distinct historical and stylistic periods. The heritage of twentieth century theatrical design will be studied through the work of artists such as Appia, Craig, Jones, Urban, and Oenslager. Emphasis is placed on the development of such stylistic treatments as realism, expressionism, symbolism, and constructivist and environmental design.

DRA 1214 Scene Design III: Techniques**4 Q.H.**

(Prereq. DRA 1213)

Advanced work focusing on the practical application of the theories, materials, and techniques of contemporary design. Emphasis is placed on furthering the student's ability to research a project as well as executing perspective drawings, renderings, and painter's elevations. Assignments in critical analysis are based on various contemporary American and European production of dramatic and operatic works. The work of such influential designers as Aronson, Bay, Mielziner, and Svoboda will be discussed as will the contributions of such nontheatre artists as Chagall, Dali, and Picasso.

DRA 1225 Scene Painting**4 Q.H.**

The history of scene painting and ornament from classical to contemporary times. Studio organization, color, color theory, equipment, tools, materials, and costs involved with painting stage scenery. Projects and exercises in the use of different media, matching colors, painting of textures, light and shade, and the use of stencils and physical textures. Laboratory sessions include painting stage scenery for University productions.

DRA 1226 Lighting Design for the Stage**4 Q.H.**

(Prereq. DRA 1200)

Basic principles and practices of stage lighting, including the qualities and functions of light, lighting instruments and controls, basic electricity, color in light, and analysis of the script in terms of light requirements. Students are expected to develop light plots and schedules for various kinds of stage productions. Classwork includes laboratory work on lighting crews for University productions.

DRA 1246 Sound for the Theatre**4 Q.H.**

Beginning with a basic introduction to both natural and electronically produced sound, the course will go on to discuss the component parts of sound systems, their theories and applications. Techniques of recording and editing will be discussed and demonstrated with particular reference to the creation of sound tracks and effects for theatrical productions. The concepts of sound reinforcement systems for musicals, concerts, and other current professional applications will be investigated.

DRA 1261 Costuming I**4 Q.H.**

The course presents the beginning designer with the opportunity to investigate costume design theory and to foster perceptual development. Through lectures and projects, the student will have the opportunity to explore both the abstract and historical aspects of costume design as well as textual analysis and its conceptual implications. Prior art or design education is not necessary.

DRA 1265 Pattern Drafting and Costume Construction**4 Q.H.**

The course will develop the skills and techniques necessary for the patterning, cutting, and construction of costumes for the stage. Flat pattern drafting, draping, and finishing techniques will be covered.

DRA 1279 Puppetry**4 Q.H.**

A theoretical and practical survey of the art of puppetry. Utilizing a lecture/laboratory format, the history of puppetry is examined from prehistoric times through the present, and construction techniques for various styles of puppets are demonstrated and applied. The course covers shadow, hand, rod, hand-and-rod, bib, scarf, and marionette puppets.

DRA 1280 Stage Makeup**4 Q.H.**

The principles of, the reasons for, and the materials used in makeup for the theatre, television, and films. The practical application of types and styles of makeup—straight, old-age, character, and corrective—is also included.

DRA 1282 Stage Management**4 Q.H.**

The course examines the fundamental techniques of stage management in educational, community, and professional theatres and the working relations between stage managers and directing, acting, and technical personnel. The course includes the study of practical concepts of organizing and running performances, and a discussion of the philosophy of the stage manager as a collaborative artist and craftsman.

DRA 1284 Theatre Management**4 Q.H.**

Theatre management, including problems of financing, promoting, and programming for educational, community, profit, and nonprofit professional theatre.

DRA 1292 Children's Theatre**4 Q.H.**

Theories and methods of creative techniques related to children's programs in schools, churches, and recreational facilities. Analysis of literature in preparation for production of children's plays.

DRA 1300 Acting II**4 Q.H.**

(Prereq. DRA 1150)

Fundamental analysis of the script, including physicalizations and vocal scoring; character analysis; scenes performed for classroom analysis.

DRA 1301 Acting III**4 Q.H.**

(Prereq. DRA 1300)

Further development of the actor's tools, script and character scoring, exercises for physical and psychological freedom. In-class scenes from works in progress are included.

DRA 1302 Acting IV 4 Q.H.
(Prereq. DRA 1301)

This course deals with the specific demands which verse plays place on actors. By working on scenes, textual analysis of individual speeches, and reading relevant criticism, students will become familiar with different aspects of text analysis and the problems inherent in acting verse. One paper will be required. The course will concentrate on the works of Molière and Shakespeare.

DRA 1350 Problems in Direction 4 Q.H.
(Prereq. DRA 1180)

Experimentation in theory related to the staging of classical and modern drama. Analysis of plays in actual production: casting, rehearsals, character interpretations. Each student is responsible for the production of a one-act play.

DRA 1370 Rehearsal and Performance 4 Q.H.
(Prereq. Permission of the instructor)

Oriented to allow the students to participate in public performance through preparation and rehearsals in areas of acting, directing, design, and stagemanaging.

DRA 1400 Costuming II 4 Q.H.
(Prereq. DRA 1261 or permission of instructor)

Advanced study in textual interpretation and its application to costume design. Conceptual and stylistic development will be emphasized through assigned projects in the various genres of the performing arts.

DRA 1410 Technical Production 4 Q.H.

(Since this course will be the culmination of the design student's background and experiences, the student must already have completed all courses stipulated in his/her chosen design concentration before taking this particular course.) An advanced course which allows the student the opportunity to further explore his or her capabilities through the practical application of acquired technical and aesthetic skills in an area related to the student's desired specialization. Focusing on one substantial production or project responsibility, this specialized study will be designed and executed in close supervision with the faculty member responsible for the area of concentration.

DRA 1420 Advanced Drafting and Construction 4 Q.H.

(Prereq. DRA 1209)

A specialized course in technical production techniques. Drafting procedures necessary for the conversion of designer's drawings into detailed rear elevation and construction layouts will be covered, as well as the development of section, isometric, and oblique views. Through a series of practical and project exercises, the various factors governing the construction and rigging of two-

and three-dimensional scenery, linear-motion, rotary-motion, and elevating systems will be analyzed. Emphasis is placed on theatrical problem solving with regard to safety, dependability, and economy.

DRA 1430 Lighting Design II 4 Q.H.
(Prereq. DRA 1226 and DRA 1209)

An intensive course in lighting design theory and practice. Students are expected to design numerous lighting plots, sections, instrument schedules, and design concepts, for various types of productions and spaces. Current professional techniques and practices will be investigated and discussed.

DRA 1500 Playwriting II 4 Q.H.
(Prereq. DRA 1140)
Continuation of DRA 1140.

DRA 1800, DRA 1801, DRA 1802, DRA 1803
Practicum in Play Production (each) 1 Q.H.
Laboratory practice in technical theatre: scene building and painting; performing backstage functions. To be repeated for credit, up to four credits.

DRA 1810, DRA 1811, DRA 1812, DRA 1813
Junior-Senior Honors Program (each) 4 Q.H.
For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 1.

DRA 1820, DRA 1821, DRA 1822, DRA 1823
Directed Study (each) 4 Q.H.

DRA 1840 Special Topics in Acting and Directing 4 Q.H.
An in-depth examination of a subject of particular significance to the field.

DRA 1860 Special Topics in Theatrical Design 4 Q.H.
An in-depth examination of a subject of particular significance to the field.

DRA 1890 Special Topics in Theatre History—Dramatic Criticism 4 Q.H.
An in-depth examination of a subject of particular significance to the field.

INT 1100 Introduction to Art, Drama, and Music 4 Q.H.

This interdisciplinary course offers an integrated approach to three related disciplines: art, drama, and music. Basic vocabulary and analytical techniques are established for each discipline, emphasizing such common elements as color, line, rhythm, texture, and form. Representative works from various periods are examined in the context of the cultures that produced them, and lectures focus on parallels and contrasts among the three disciplines' manifestations of specific trends, principles, and ideals. Lectures, readings, and listening assignments are supplemented by visits to art

galleries and attendance of concerts and theatrical performances.

INT 1110 American Musical Theatre 4 Q.H.
This interdisciplinary course, offered by the departments of Drama and Music, traces the development of the American musical from works

such as "The Black Crook" to present. The role of musical theatre, both as entertainment and as serious art form, is considered through an examination of script, score, dance, and design. Works by composers and lyricists such as Bernstein, Rodgers and Hammerstein, the Gershwins, Weill, Lerner and Loewe, and Cole Porter are studied.

Economics

Unless otherwise stated, there are no prerequisites for advanced economics courses. Exceptions are made at the discretion of the instructor.

ECN 1105 Principles of Economics 4 Q.H.
Topics include development of macroeconomic analysis; review of national income concepts; national income determination, fluctuation, and growth; role of the banking system and the Federal Reserve System; government expenditures and taxation; international trade; balance of international payments.[†]

ECN 1106 Principles of Economics 4 Q.H.
The course focuses on the role of the market pricing system of demand and supply in determining the allocation of resources to competing uses, and why this system may not function adequately in certain areas. Study includes the application of economic principles to private and public problems in such areas as pollution, poverty, and racial discrimination.[†]

ECN 1115 Principles and Problems of Economics I 4 Q.H.
The course offers an introduction to the conceptual aspects of economics; the flow of national income; economic growth and fluctuation; the role of money and banking; monetary and fiscal policies. Emphasis is on assisting students in developing conceptual tools for use in the analysis of economic problems facing modern society.

ECN 1116 Principles and Problems of Economics II 4 Q.H.
The course focuses on development of basic theory of demand, supply, and market price. Applications to selected microeconomic problems such as basic economics of monopoly and competition, poverty, race and discrimination, urban affairs, pollution, and other problems that relate to the role of the pricing system in resource allocation and income distribution.

ECN 1130 Medical Economics 4 Q.H.
The course includes examination and discussion of the following topics: health-care trends in the United States; causes for increases in medical-care costs; apply and training of health-care personnel; the nation's need for physicians, nurses, pharmacists, and other allied health personnel; the quality of medical care; economics of health insurance plans; consumer demand for health care; medical facilities; professional and semiprofessional personnel.

ECN 1140 Economics of Crime 4 Q.H.
The course offers theoretical and empirical analysis of the economic causes of criminal behavior. The social costs of crime and its prevention will be covered; techniques for designing optimum law enforcement policies will be developed.

ECN 1150 Economics of World Energy and Primary Resources 4 Q.H.
This course investigates economic, political, and historical backgrounds of the energy and other resources problems. Future impact of primary resources limitations on United States and world economics are analyzed. Feasibility studies of resource substitution.

ECN 1155 Superpower Economics 4 Q.H.
This course offers an analysis of the relative economic structure and strength of the United States, the Soviet Union, Japan, the Common Market, and China, as well as the economic relations among these powers. The course also examines the impact of these relations on the domestic economies of the superpowers and of the developing nations of the world.

[†]Satisfies Core Curriculum Category II requirement.

ECN 1170 Economic Issues In Minority Communities**4 Q.H.**

Minority lifestyles, perspectives, self-images and social position in the urban community are all affected by economic factors, especially those specific to the minority poor. Students have the opportunity to examine these issues, particularly in terms of the applications of basic economic theories to the economic realities of minority communities.

ECN 1215 Macroeconomic Theory**4 Q.H.**

(Prereq. ECN 1105, ECN 1115, or equiv.)

Investigation of the conceptual and empirical problems of creating and using national accounts; price index problems; conceptual and empirical evaluation of several consumption and investment functions and their policy implications; multiplier and accelerator models; a brief history of recent cyclical fluctuations. Theories of inflation and growth are analyzed in the light of recent economic history.

ECN 1216 Microeconomic Theory**4 Q.H.**

(Prereq. ECN 1106, ECN 1116, or equiv.)

A detailed study of supply-and-demand analysis, various elasticity concepts and applications, theory of consumer demand, theory of production, derivation of cost curves. Detailed analyses of pricing and output behavior in the several market structures with their welfare implications; the pricing of resources.

ECN 1250 Statistics I**4 Q.H.**

Topics include elementary set theory, basic probability, measurement and presentation of economic statistics, descriptive statistics, basic estimation techniques, testing statistical hypotheses, and sampling problems.

ECN 1251 Statistics II**4 Q.H.**

(Prereq. ECN 1250)

Topics include analysis of variance, correlation and linear regression analysis, multivariate regression analysis, and Bayesian decision making.

ECN 1253 Accounting Data for Social Scientists**4 Q.H.**

(Prereq. ECN 1115 and ECN 1116, or ECN 1105 and ECN 1106 or permission of instructor)

This course is designed to familiarize non-accountants with the basic techniques and procedures of private and public accounting. Topics include developing and interpreting income statements and balance sheets, asset turnover, key accounting ratios, capita budgeting, cost flow analysis, and present-value determinations. The course also compares and contrasts the treatment of macro- and micro-accounting data.

ECN 1310 Labor Economics**4 Q.H.**

Economic analysis of the labor market, including the labor force, the demand for labor, and the

institutions and policies dealing with them. An examination of employment, unemployment, wage determination, and the development and efficient use of labor resources; collective bargaining issues and their economic consequences.

ECN 1311 Employment and Training Programs and Policies**4 Q.H.**

Objectives of employment and training programs; efforts to improve the labor market position of impoverished groups; economic evaluation of employment and training programs; planning for local labor markets and future needs.

ECN 1312 Women in the Labor Market**4 Q.H.**

Economic analysis of the labor market position of women in light of the changing structure of the economy of the United States and of the institutional setting. Analysis of female labor participation, unemployment, wage differentials, occupational concentration, and occupational segregation. Theories and evidence of sex discrimination. New opportunities open to women.

ECN 1313 Local Labor Market Analysis and Human Resource Planning**4 Q.H.**

(Prereq. ECN 1115 and ECN 1116, or ECN 1105 and ECN 1106; ECN 1310 strongly recommended)

This course helps acquaint the student with a variety of methods and data sources for analyzing conditions in regional, state, and local labor markets to determine the extent, nature, and causes of human resource problems and to utilize that information in planning and designing appropriate employment and training strategies. Topics will include empirical analysis of state and local labor-force developments, unemployment and poverty problems, the industrial and occupational composition of employment, wage structures, and trends in state and local income distributions, as well as methods for planning employment and training programs at the state and local levels.

ECN 1314 Economics of Education and Human Capital**4 Q.H.**

(Prereq. ECN 1115 and ECN 1116, or ECN 1105 and ECN 1106; ECN 1311 strongly recommended)

This course provides a theoretical and empirical treatment of a variety of economic issues related to education and job training programs, including formal education (secondary and post-secondary), vocational education, on-the-job training, and CETA-related employment and training programs. Emphasis will be placed upon the use of analytical techniques for determining the effectiveness of education and training investments from a private and social standpoint, including the design of follow-up studies, cost-effectiveness analysis, and benefit-cost analysis.

ECN 1315 Income Inequalities and Discrimination**4 Q.H.**

Economic analysis of income inequalities and incidence of poverty. Examination of forces contributing to income inequality and poverty; economics of racial discrimination; public welfare system and other income maintenance schemes.

ECN 1320 Urban Economics**4 Q.H.**

Study of urban growth and development, intermetropolitan location of business firms, regional shifts in economic activity, intra-metropolitan location of firms and households, and land use patterns.

ECN 1321 Urban Economic Problems and Policies**4 Q.H.**

Sequel to ECN 1320, Urban Economics. Economic analysis of selected urban problems such as housing, poverty, transportation, education, health, crime, and the urban environment. Discussion of public policies relating to such problems.

ECN 1322 Economics of Transportation**4 Q.H.**

Transportation and land-use patterns; externalities; social costs and social benefits of various modes of transportation, ownership, regulations, and financing of various modes of transportation; economies of new technology in transportation.

ECN 1323 Economics of the Quality of Urban Environment and Control**4 Q.H.**

Economic analysis of air, water, thermal, and noise pollution; the utilization of urban space and other urban resources; identification of possible economic effects of urban environment, such as crime, delinquency, immobility, and congestion.

ECN 1330 Development Economics**4 Q.H.**

Prospects for economic growth and development in poor nations as indicated by economic analysis and historical experience; social, cultural, and institutional determinants of growth; analysis of agriculture and development, the role of technological change, population; and foreign trade.

ECN 1331 American Economic Development**4 Q.H.**

Economic development of the United States from the colonial period to the present, historical changes in available factors, economic institutions and technologies, special attention to preconditions of industrialism. The American Industrial Revolution, its spread and socio-economic consequences. The Great Depression and the subsequent rise of mixed economy and welfare state; U.S. adjustments to postwar economic changes.

ECN 1332 Economic History of Less Developed Countries**4 Q.H.**

The problems of initiating and sustaining economic growth and development in selected Third World countries during the last two hundred years.

Role of traditional economic structures of different development strategies and state policies.

ECN 1333 European Economic Development**4 Q.H.**

Economic inheritance of the nineteenth-century development of capitalism and laissez-faire. The aftermath of the Industrial Revolution, European overseas expansion, the twentieth century, the world wars, the dissolution of empires, American economic conquest and European integration, the future of less developed areas in southern Europe. Environmental impact of industrialism and the implications of technological society.

ECN 1334 Comparative Economics**4 Q.H.**

Competing types of theoretical economic systems; analysis of organization and operation of currently existing types of communist, socialist, and capitalist economies; comparison and evaluation of economic behavior and performance of different economic systems.

ECN 1335 International Economics**4 Q.H.**

(Prereq. ECN 1115, ECN 1116 or equiv.)

Introduction to the theory of international trade and payments; analysis of tariffs and commercial policy; the international monetary system; trade and payment issues in developed and less-developed countries.

ECN 1337 History of Economic Thought**4 Q.H.**

This course provides comprehensive study in the development of economic thought. Coverage includes mercantilism as the first economic doctrine; analysis of older classical school, its later refinements (modern marginalism), and its important critics (socialists, Marxists); Keynesian and modern developments.

ECN 1340 Government Expenditures: Structure and Evaluation**4 Q.H.**

(Prereq. ECN 1106, ECN 1116, or equiv.)

Fiscal functions of government, fiscal institutions and politics, theory of social goods, public expenditure growth and structure, the federal budget expenditure evaluation and cost-benefit case studies, fiscal federalism in theory and practice.

ECN 1341 Financing of Government: Taxation and Debt**4 Q.H.**

(Prereq. ECN 1106, ECN 1116, or equiv.)

Principles of taxation; problems of tax structure and reform; major names at federal, state, and local levels; tax burden incidence; effects of taxation on economic efficiency and growth; negative income tax and social security finance; issues of public debt; public enterprise pricing; international tax coordination; taxation in developing countries.

ECN 1342 Money and Banking**4 Q.H.**

(Prereq. ECN 1105, ECN 1115, or equiv.)

A study of the nature and the functions of money, credit, and the role of financial organizations in

the U.S. economy. The basic theories of banking, the money supply, monetary theory, and monetary policy will be emphasized.

ECN 1345 Business Cycles and Inflation

4 Q.H.

(Prereq. ECN 1105 or ECN 1115; ECN 1106 or ECN 1116; ECN 1215)

A study of the theories of business cycles and inflation and an empirical application of these theories to current business cycle, inflation, and stagflation problems.

ECN 1350 Introduction to Econometrics

4 Q.H.

(Prereq. ECN 1105 or ECN 1115; ECN 1106 or ECN 1116; and ECN 1251)

The course focuses on the methods of econometric estimation and forecasting. Coverage includes topics in various statistical techniques. Students are given the opportunity to construct their own models and use computer facilities for estimation and forecasting.

ECN 1351 Problems in Economic Research

4 Q.H.

(Prereq. ECN 1105 or ECN 1115; ECN 1106 or ECN 1116; ECN 1251)

This course examines research methods of practicing economists with typical problems from applied areas of economics and choice of modeling framework; problems of data collection, review of estimation techniques and interpretation of results; development of static and dynamic adaptive policy models.

ECN 1353 Introduction to Mathematical Economics

4 Q.H.

(Prereq. ECN 1115 or ECN 1105; ECN 1116 or ECN 1106)

Functional analysis, matrix algebra, differential calculus and optimization—mathematics and elementary economic applications.

ECN 1354 Mathematical Economics

4 Q.H.

(Prereq. ECN 1353 or permission of instructor)

For economics, mathematics, business, and engineering students interested in a broad coverage of economic analysis using mathematical techniques as tools. Topics include models of the firm, demand theory, input-output, and other planning and policy models of the national economy.

ECN 1360 Managerial Economics

4 Q.H.

(Prereq. ECN 1116 or ECN 1106)

This course emphasizes the application of economic principles and theory, by the use of case studies, to the solution of decision-making problems in such areas as demand forecasting, price policies, estimation and control of costs, financing of capital investments, and responses to government taxation and regulation policies.

ECN 1361 Social Control of Economic Activities

4 Q.H.

Development of the government's role in economic activities, examining the relation between the government and industry, labor, agriculture, public utilities, and consumers. The course will trace the changing role of the government from a laissez-faire policy to one of direct intervention in the economy. Current topics such as wage and price control, environment and antipollution policies, consumer protection, and conglomerate mergers will be discussed.

ECN 1362 Industrial Organization and Public Policy

4 Q.H.

(Prereq. ECN 1216)

The theoretical framework for analysis and evaluation of the static and dynamic performance of real markets. An examination of the empirical studies testing the usefulness of applying theory to real markets. An examination of antitrust as a public policy designed to promote better market performances.

ECN 1401 Advanced Economic Theory

4 Q.H.

(Prereq. ECN 1216 and ECN 1215)

The course provides advanced theoretical treatment of selected topics in micro- and macro-economics. Recommended for students planning to take graduate economics.

ECN 1490, ECN 1491 Directed Study

(each) 4 Q.H.

This course offers independent work under the direction of a member of the department on a chosen topic. Limited to qualified seniors majoring in economics with approval of the department.

ECN 1492 Senior Economic Seminar

4 Q.H.

(Prereq. ECN 1216 and ECN 1215)

This is a course for senior economics majors, coordinating and applying economic concepts, methodology, and data to contemporary issues and problems of broad social, economic, and philosophical importance.

ECN 1495, ECN 1496, ECN 1497, ECN 1498

Junior-Senior Honors Program (each) 4 Q.H.

For details contact the Honors Office, 183 Holmes.

INT 1217 Water, Water

4 Q.H.

This course is an interdisciplinary introduction to our most precious resource. Water has affected our bodies, our planet, our history, and our culture. How we manage it will shape our future. Because of increasing demand, waste, and pollution, we are depleting — and risk destroying — the limited supply of usable fresh water. This course will focus on water through scientific, historical, and cultural viewpoints, and survey contemporary water problems in all their dimensions — political, economic, and technological.

English

Unless otherwise indicated, the prerequisite for upperclass courses is a Freshman English sequence: for students in the Basic Colleges this means ENG 1110 and ENG 1111, or ENG 1013, ENG 1014, and ENG 1111; for the College of Engineering, ENG 1111, and ENG 1113; for Lincoln College, ENG 1110, ENG 1111, and ENG 1114; and for international students, ENG 1005 and ENG 1006.

ENG 1001 Intensive English as a Second Language

Intensive review of English grammar to help students develop listening, speaking, reading, writing, and studying skills in the classroom, language laboratory, and small-group tutorials.

ENG 1004 Fundamentals of English for Non-native Speakers 4 Q.H.

(Prereq. Special placement)

Advances students' English language proficiency through reading comprehension drills, vocabulary development, oral presentations, and intensive practice, including grammar and mechanics. Introduces such college study techniques as note taking and basic library skills.

ENG 1005 English for International Students I 4 Q.H.

(Prereq. ENG 1004 or special placement)

Emphasizes the importance of clearly stating and supporting a thesis in organized paragraph form. Focuses on short prose readings as examples of descriptive, narrative, and expository techniques. Writing and rewriting of short weekly essays required.

ENG 1006 English for International Students II 4 Q.H.

(Prereq. ENG 1005)

Introduces literature study through close reading and discussion of fiction, nonfiction, and poetry. Continues development of rhetorical techniques by requiring weekly essays written in relation to the readings and rewritten to improve content, organization, and diction.

ENG 1013 Fundamentals of English I 4 Q.H.

(Prereq. Special placement)

The course offers an introduction to principles of effective expository writing; emphasis on description paragraph construction, and organization; review of the conventions of English usage, punctuation, and syntax; essay assignments.

ENG 1014 Fundamentals of English II 4 Q.H.

(Prereq. ENG 1013)

Focus on exposition, argument, and academic essay writing; instruction in writing a research paper; continued emphasis on the conventions of English usage, punctuation, and syntax; essay assignments.

ENG 1110 Freshman English I 4 Q.H.

The course focuses on the individual student's writing skills. Included are application of important principles of logic and rhetoric to exposition and argumentation; review of sentence structure,

punctuation and paragraphing; extensive reading and analysis of the essay form; theme assignments.

ENG 1111 Freshman English II 4 Q.H.

(Prereq. ENG 1110 or ENG 1013 and ENG 1014)

This course continues instruction in writing, with emphasis on expository methods of defining, describing, analyzing, persuading, and composing the research paper. Students write lengthy critical essays based on consideration of primary and secondary materials. Selections of poems, stories, and plays provide an introduction to literature and are the subject matter for discussion of writing technique and written assignments. ENG 1111 follows ENG 1110 and is required of all freshmen in the University.

ENG 1113 Great Themes in Literature 4 Q.H.

Content determined by instructor, who chooses a theme and a number of illustrative works from different periods. Students are required to write critical papers, and are expected to develop techniques of research and documentation.

ENG 1114 Freshman Technical Writing 4 Q.H.

(Prereq. ENG 1110, ENG 1111)

This course is designed to serve the professional writing needs of students in the College of Engineering through instruction in formal rhetoric and examination of a variety of professional forms: description, analytical reports, systems design, lab reports, and proposal specifications.

ENG 1115 Poetry 4 Q.H.

Extensive exercise in close reading of selected poems, study of critical terms, and practice in different critical approaches to poetry; examination of techniques for reading a variety of poetic texts; critical papers required.

ENG 1116 Fiction 4 Q.H.

Close reading of selected novels and short stories, study of critical terms, practice in different critical approaches to fiction; critical papers required.

ENG 1117 Drama 4 Q.H.

Close reading of selected plays, study of critical terms, practice in different critical approaches to drama; critical papers required.

ENG 1118 Introduction to Linguistics 4 Q.H.

Background in current linguistics. Diverse topics include the nature and origin of language, animal communication systems, prescriptive and descriptive grammar, language change, dialects, and language in literature. Reviews modern concepts of language structure: phonology, morphology, syntax, and semantics.

ENG 1119 Foundations of the English Language**4 Q.H.**

Studies the development of modern English from Anglo-Saxon beginnings; effects of Scandinavian and Norman invasions; dialect geography; evolutionary changes, word formation and borrowing; origins of writing and problems of spelling. Readings include both formal and informal writings, literary selections, wills, journals, and private and public letters.

ENG 1120 Survey of English Literature I**4 Q.H.**

Surveys the major British writers and major literary forms and works from the Middle Ages to the end of the eighteenth century. Works by such writers as Chaucer, Spenser, Shakespeare, Milton, Pope, and Swift will be read and discussed.

ENG 1121 Survey of English Literature II**4 Q.H.**

Surveys the major British writers and major literary forms and works from the romantic period (c. 1800) to the mid-twentieth century. Works by such writers as Wordsworth, Keats, Browning, Yeats, Lawrence, and Eliot will be read and discussed.

ENG 1123 Survey of American Literature I

Surveys the major American writers and major literary forms and works from the colonial period to the Civil War. Works by such writers as Taylor, Cooper, Poe, Hawthorne, Melville, and Emerson will be read and discussed.

ENG 1124 Survey of American Literature II

Surveys the major American writers and major literary forms and works from the Civil War to the mid-twentieth century. Works by such writers as Whitman, Dickinson, Twain, James, Hemingway, Fitzgerald, and Faulkner will be read and discussed.

ENG 1125 Technical Writing I**4 Q.H.**

This course is a composition elective to train writers for careers in technical writing. Course provides instruction in writing clear, unambiguous prose; describing processes; and researching published information through practice in writing memoranda, proposals, feasibility and program reports, and operation manuals.

ENG 1126 Backgrounds in English and American Literature**4 Q.H.**

Readings in translation of Greek, Roman, and biblical literature as background for literary study. Emphasis on the development of myth, genre, and theme. Readings will include, among others, Homer, Virgil, Ovid, the most influential parts of the Bible, and Dante.

ENG 1275 Grammar for Journalists**4 Q.H.**

(Prereq. Journalism majors only)
Reviews the mechanics of newspaper and magazine prose, emphasis is on grammatical forms, punctuation, spelling, effective structures, and

conventional usage; exercises and essay assignments.

ENG 1276 Science Fiction**4 Q.H.**

The myths and rhetorical (scientific and pseudoscientific), strategies of science fiction from Mary Shelley's *Frankenstein* through contemporary authors such as Vonnegut, Bradbury, Heinlein, and Clarke.

ENG 1277 Topics in Science Fiction**4 Q.H.**

Focuses on a single writer or group of writers (Wells or writers of contemporary American science fiction); a theme (women in science fiction or the future city); or a unifying idea (time travel or utopia/dystopia).

ENG 1278 Modern Bestseller**4 Q.H.**

Explores the function of quest, romance, and adventure in a selection of contemporary, bestseller fiction by such authors as Hailey, Robbins, and Irving Wallace.

ENG 1279 The Modern Novel**4 Q.H.**

Studies the themes of important novelists of the twentieth century; analyzes styles, techniques, and trends in fiction; includes such authors as Joyce, Lawrence, Hemingway, Faulkner, and Bellow.

ENG 1280 Modern Drama**4 Q.H.**

Studies the development of drama since the late nineteenth century as a function of realism, naturalism, symbolism, and surrealism.

ENG 1281 The Modern Short Story**4 Q.H.**

The study of short-story writers with close attention to such figures as Poe, Joyce, Lawrence, Hemingway, and Oates.

ENG 1283 Contemporary Fiction**4 Q.H.**

British and American writers from 1945 to the present, including such figures as Britain's Lessing, Burgess, Amis, and Powell, and America's Pynchon, Vonnegut, Oates, and Barth. Emphasis is on the experimental and modernist authors.

ENG 1284 Business Tradition in Literature**4 Q.H.**

Examines the various literary images of the businessman as new frontier opportunities for the accumulation of wealth opened up. Biographies, autobiographies, novels, plays, and films are examined to study the many facets of these captains of industry and to determine their impact on society.

ENG 1285 Literature and the Law**4 Q.H.**

This course uses literature to investigate the problems of crime and justice as they occur throughout time, from ancient Greek tragedies to modern American novels. The readings may help the student to discover the changing nature of the criminal—hero or victim or villain—and to deal with the social, psychological and political facts that define him or her.

ENG 1286 Literature and Politics 4 Q.H.

Explores how authors from Sophocles to Mailer represent the religious, moral, and ethical conflicts arising from the acquisition, use, and misuse of political power. The literature falls into several categories: utopian, which establishes a conflict between the ideal and the real; satirical, which threatens a power structure by exposing it to scorn; analytic, which describes the rise to and fall from power of individuals, parties, or states; and investigative, which takes the reader inside a power elite to observe its inner operations. The course examines the difference between the ideal of government and its reality.

ENG 1287 The Literature of Science 4 Q.H.

Examines the literary methods used by scientists to involve us in their experiences and discoveries. Many of the most creative minds of science have left literary works full of clarity, vigor, and emotive power. Explores a variety of these works from antiquity to the present to see how the creativity of the scientist is fundamentally the same as the creativity of the literary artist. Readings will be drawn from astronomy, physics, natural history, biology, mathematics, and psychology.

ENG 1288 Film and Literature 4 Q.H.

This course explores the ways in which film can transform the written word to a visual experience, and illustrates the way in which cinematic techniques help create and extend the meaning of that visual experience. Weekly screening sessions give students the opportunity to pursue and develop cinematic interests evolving from class discussions.

ENG 1289 Shakespeare on Film 4 Q.H.*

This course examines the various treatments of Shakespeare's plays on film. It is concerned with the technical aspects of film and how these are used by directors to transfer Shakespeare's plays from the stage to the screen.

ENG 1290 Topics in Film 4 Q.H.*

The course focuses on a movie genre (e.g., the western, the gangster film, the thriller), on a movie personality (e.g., an actor, writer, director), or on a theme (e.g., women in the movies).

ENG 1291 Popular Culture 4 Q.H.

Surveys the development of popular culture in the United States as the living culture that arose in response to the development of a leisure-time market and the technology to reach it. The focus of the course is on the mass media, surveyed chronologically for evidence of trends arising from changes in popular taste and technology. Among the media to be discussed are popular literature, radio, and television.

ENG 1293 Topics in Popular Culture 4 Q.H.

The course focuses on such topics as the soap opera, the western, the police story, etc.; on a popular culture activity; or on a popular culture perspective.

ENG 1300 Topics in Fiction 4 Q.H.

Studies a particular kind of fiction, such as the novella; a problem in fiction, such as the role of the narrator; a particular group of fiction writers; or a theme in fiction.

ENG 1301 Topics in Drama 4 Q.H.

Studies a particular kind of drama, a particular group of dramatists, or a theme in drama.

ENG 1302 Topics in Poetry 4 Q.H.

Studies a particular kind of poetry, such as the sonnet or the dramatic monologue; a problem in poetry; a particular group of poets, such as the confessional poets; or a theme in poetry.

ENG 1307 Approaches to Literature 4 Q.H.

Exercises and readings in ancient and modern theories of literature. Included are Marxist, Freudian, Jungian, and New Critical theories, as well as selections from the criticism of Plato, Aristotle and the Romantics.

ENG 1308 Myth and Archetype in Literature 4 Q.H.

Studies twentieth-century theories of myth and archetype as they have influenced our understanding and analysis of works of literature.

ENG 1309 Topics in Literary Criticism 4 Q.H.

Studies a particular problem method or school of criticism, such as structuralism, mythopoeic, or archetypal criticism.

ENG 1350 Intermediate Writing 4 Q.H.

Provides writing instruction for students who wish to improve their writing skills; opportunity for students to develop their particular interests in subject matter and form.

ENG 1351 Creative Writing 4 Q.H.

Gives the beginning writer an opportunity to practice various forms of writing both poetry and prose. Class discussion of student work.

ENG 1352 Advanced Writing 4 Q.H.

(Prereq. ENG 1350 or permission of instructor)
A composition elective for experienced writers who wish to hone their skills; opportunity for students to develop their particular interests of subject and form.

ENG 1357 Poetry Workshop 4 Q.H.

(Prereq. ENG 1351 or permission of instructor)
This is an advanced workshop course in writing and examining original student poetry. Students are expected to experiment in some established poetic forms of their own choosing and to produce their own original work.

*Lab fee required.

ENG 1358 Fiction Workshop 4 Q.H.

(Prereq. ENG 1351 or permission of instructor)
This is an advanced workshop course in writing and examining original student fiction.

ENG 1359 Non-Fiction Workshop 4 Q.H.

(Prereq. ENG 1350 or ENG 1351 or permission of instructor)

This is an advanced workshop course in writing with focus on such forms as short essays, reviews, and profiles.

ENG 1360 Topics in Writing: Reading and Writing Non-Fiction 4 Q.H.

A combination of literary analysis and creative writing. Concentration on subjects of twentieth-century non-fiction prose such as politics, science, "culture," athletics, and natural history. Among authors who might be considered: Elizabeth Drew, Russell Baker, Stephen Jay Gould, Louise Thomas, John McPhee, Roger Angell, David Halberstam, Joseph Wood Krutch, and John Hay.

ENG 1361 The Writing Process 4 Q.H.

This course is designed primarily to provide substantial experiential and scholarly training for undergraduate tutors in the English Department's Writing Center.

ENG 1362 Publication Arts 4 Q.H.

This course is designed to acquaint students with basic publishing skills. Each student can choose an area of specialization, such as fiction, medicine, law, or engineering, in order to develop skill in editing manuscripts.

ENG 1370 Technical Writing II 4 Q.H.

(Prereq. ENG 1125 or permission of instructor)

This is a course in technical writing for students who wish to develop skills in a particular subject or form.

ENG 1371 Writing for the Computer Industry 4 Q.H.

(Prereq. ENG 1125, or permission of instructor and one computer science course)

Focuses on computer documentation: general information, operating and programming instructions. Includes graphics, layout, testing, and revision.

ENG 1380 Writing for the Professions: Health Services 4 Q.H.

This course is designed to serve the professional writing needs of students in the College of Nursing and the College of Pharmacy and Allied Health Professions through instruction in formal rhetoric and practice with a variety of professional forms: lab reports, clinical evaluations, medication analyses, and HEW proposals.

ENG 1381 Writing for Professions: Business Administration 4 Q.H.

This course is designed to serve the professional writing needs of students in the College of Business Administration through instruction in formal rhetoric and practice with a variety of professional forms: letters, short memos, formal staff reports in the functional areas of accounting, personnel, marketing, finance, transportation, and insurance.

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ENG 1382 Writing for the Professions: Criminal Justice 4 Q.H.

Designed to serve the professional writing needs of students in the College of Criminal Justice, this course offers instruction in formal rhetoric and practice with a variety of professional forms.

ENG 1400 Topics in Genre 4 Q.H.

Studies several genres concurrently; or studies, cross-generically, literary modes such as satire, pastoral, or melodrama; or studies a theme in a number of different genres.

ENG 1401 Grammars of English 4 Q.H.

Designed for students seeking comprehensive knowledge of English grammar, this course provides a study of structure and usage in English according to traditional, descriptive, and generative (transformational) approaches.

ENG 1402 Transformational Grammar 4 Q.H.

The theories of generative-transformational grammars by Noam Chomsky and others. The opportunity to develop the skill with which to construct and operate specific generative-transformational grammars.

ENG 1407 Introduction to Semantics 4 Q.H.

The relation between language and behavior, levels of abstraction in communication, habits of evaluation of linguistic phenomena, and the modification of such habits in the direction of human understanding and survival.

ENG 1408 Topics in Linguistics 4 Q.H.

Examines closely such topics as the application of linguistics to the study of literature, problems in semantics (e.g. language in law, language and social class), or problems in American dialects.

ENG 1409 American Novels I 4 Q.H.

Focuses intensively on the themes, forms, and techniques of the major American novelists of the nineteenth and early twentieth centuries, such as Cooper, Hawthorne, Melville, James, and Dreiser.

ENG 1410 American Novels II 4 Q.H.

The course focuses intensively on the themes, forms, and techniques of modern American novelists such as Hemingway, Fitzgerald, Steinbeck, and Faulkner.

ENG 1411 English Drama I 4 Q.H.

Surveys representative English drama, excluding Shakespeare, from the Towneley Cycle to Sheridan. The dramas will be read and discussed to determine themes and characteristics and to chart the development of the genre from its origins in England to the end of the eighteenth century.

ENG 1412 English Drama II**4 Q.H.**

Surveys representative English drama of the nineteenth and twentieth centuries. The dramas will be read and discussed to determine themes and characteristics and to chart the development of the genre from the nineteenth century to the present.

ENG 1550 Psychology and the Novel**4 Q.H.**

Concentration on twentieth-century novels whose themes stress individual behavior and motivation and whose form and style often try to imitate human mental and emotional processes. Includes novels by such writers as Kafka, Dostoevski, Faulkner, Conrad, and Lawrence.

ENG 1551 Sex Roles in Literature**4 Q.H.**

Investigates the relation between sex roles, male and female, and literary portrayals. Selections represent male and female writers and provide a culturally comparative perspective. Readings include novels, plays, autobiographies, short stories, poems, as well as critical materials.

ENG 1552 Fantasy**4 Q.H.**

Studies in the theory and practice of fantasy as found in the works of such authors as Swift, Carroll, Wells, and C.S. Lewis.

ENG 1557 Topics in Fantasy**4 Q.H.**

Explores such areas as dreams, nightmares, and borderline states of consciousness in the works of such writers as Poe, Tolkien, and Kafka.

ENG 1558 Literature in Context**4 Q.H.**

Attempts to place the writer in the context of a special theme. For example, the course might study a group of authors influenced by their common interest in psychoanalysis, by their social consciousness, or by an interest in the Wild West and the settlement of America.

ENG 1559 Literature in Context**4 Q.H.**

Similar to ENG 1558 but with different texts and contexts in a given year.

ENG 1600 Topics in Literature**4 Q.H.**

This course deals experimentally with subjects and themes such as heroes and villains, myth and folklore, fiction about war.

ENG 1601 Topics in Literature**4 Q.H.**

Similar to ENG 1600 but with different topics in given year.

ENG 1602 Major Figure**4 Q.H.**

Devoted entirely to the work of one writer. Specific writers vary widely and change frequently; for example, Mark Twain, Virginia Woolf, or Eugene O'Neill may be selected.

ENG 1607 Major Figure**4 Q.H.**

Similar to ENG 1602, but with concentration on a different writer in a given year.

ENG 1608 Urban Life and Literature**4 Q.H.**

This course examines the city in literature as it has been depicted from ancient times to the present.

Such themes as the city as a locus of evil, the city as a place of possibility, and the city as a center of art and an influence on creative form are discussed. Works by Plato, Virgil, Juvenal, Addison, Fielding, Defoe, Balzac, Whitman, Melville, James, Howells, Crane, Joyce, Dreiser, Eliot, Dos Passos, West, Bellow, Malamud, and Barthelme, among others, may be included on the reading list. The purpose of the course is to provide the student an opportunity to discover how an interdisciplinary approach to literature can be used critically—and how the city is a cultural resource, a subject of wonder, and a constant concern in literature.

ENG 1609 Contemporary American Literature**4 Q.H.**

The course explores the major literary movements and developments in American poetry and fiction from the Second World War to the present. Works by such writers as Lowell, Roethke, Plath, Pynchon, Barthelme, and Vonnegut will be read and discussed.

ENG 1610 Early American Literature**4 Q.H.**

Examines American literature of the colonial and federal periods, including Bradford, Taylor, Edwards, Franklin, Irving, and Cooper.

ENG 1611 New England Renaissance**4 Q.H.**

Studies the development of a native tradition in the context of democratic and romantic attitudes toward experience and the paradox these attitudes reveal. Works by such writers as Emerson, Thoreau, and Melville will be read and discussed.

ENG 1612 American Realism**4 Q.H.**

Examines the realistic tradition in American literature, including local color and native humor, from the end of the Civil War to the turn of the century. Works by such writers as Twain, James, Howells, Crane, and Norris will be read and discussed.

ENG 1617 Modern American Literature**4 Q.H.**

Explores the major literary movements and developments in American poetry and fiction from the turn of the century to the Second World War. Works by such writers as Anderson, Wharton, Fitzgerald, Faulkner, Frost, and Williams will be read and discussed.

ENG 1618 Children's Literature**4 Q.H.**

Studies the history of children's literature in the English language, with special attention to matters such as genre theory and critical approaches. Such works as *Alice in Wonderland*, *Uncle Remus*, *Little Women*, and *The Wizard of Oz* will be read and discussed.

ENG 1619 Topics in Children's Literature**4 Q.H.**

Focuses closely either on a specific collection of stories (e.g., *Grimm's Fairy Tales*), on a specific genre (e.g., boys' books), on a problem of evil, or on children's literature as a form of group socialization.

ENG 1620 Major Early British Novelists 4 Q.H.

The course surveys the early English novel by such authors as Defoe, Fielding, Smollett, Sterne, and Austen. The novels will be read and discussed to determine themes and characteristics and to chart the development of the genre in the eighteenth century.

ENG 1621 Major Nineteenth-Century British Novelists 4 Q.H.

The course surveys the nineteenth-century English novel by such authors as the Brontës, Thackeray, Eliot, Meredith, and Hardy. The novels will be read and discussed to determine themes and characteristics and to chart the development of the genre in the nineteenth century.

ENG 1622 Major Twentieth-Century British Novelists 4 Q.H.

Surveys the twentieth-century English novel by such authors as Joyce, Lawrence, Woolf, and Durrell. The novels will be read and discussed with the goal of determining the characteristics and charting the development of the genre in the twentieth century.

ENG 1627 Medieval English Literature 4 Q.H.

Surveys the major works of medieval English literature. Works such as *Sir Gawain*, *Piers Plowman*, and *Pearl* will be read and discussed.

ENG 1628 Chaucer 4 Q.H.

Surveys the work of Chaucer, with particular emphasis on *The Canterbury Tales*.

ENG 1629 Topics in Chaucer 4 Q.H.

Examines closely a particular work or group of works (such as *Troilus and Cressida*) or a theme (such as Chaucer's symbolism).

ENG 1630 Milton 4 Q.H.

Concentration on Milton's *Paradise Lost*, with supplementary readings in his minor poetry and prose.

ENG 1631 Topics in Medieval Literature 4 Q.H.

The course focuses on such topics as a genre (e.g. romance or debate literature) or on a theme (e.g. alchemy or King Arthur).

ENG 1632 Sixteenth-Century Literature 4 Q.H.

Concentration on sonnets, love lyrics, and erotic narrative poetry, principally by Wyatt, Sidney, Marlow, and Shakespeare.

ENG 1637 Seventeenth-Century English Literature 4 Q.H.

Examines major writers of the period, such as Bacon, Jonson, the metaphysical poets, Donne, Herbert, Dryden, and Milton.

ENG 1638 Topics in Seventeenth-Century English Literature 4 Q.H.

This course examines closely either a single writer or group of writers (e.g., Dryden or the metaphysical poets) or a topic (e.g., the flourishing of satire).

ENG 1639 Eighteenth-Century English Literature 4 Q.H.

Surveys the period; includes such major writers as Pope, Addison, Steele, Swift, Goldsmith, Burns, Johnson, and Boswell.

ENG 1640 Topics in Eighteenth-Century Literature 4 Q.H.

Examines closely such topics as a single writer or group of writers (e.g., Swift or the essayists), a genre (e.g., satire) or a theme (e.g., reason and madness).

ENG 1641 Romantic Poetry 4 Q.H.

Surveys the work of the major romantic poets: Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

ENG 1642 Topics in Romantic Poetry 4 Q.H.

This course examines closely a single writer or group of writers (e.g., the Keats-Shelley circles) or a theme (e.g., poetry and revolution or the creative process).

ENG 1647 Victorian Literature 4 Q.H.

Surveys the major literature of the period, from the works of Tennyson, Arnold, and Dickens to the works of G.M. Hopkins, Wilde, and the early writing of G.B. Shaw and Conrad.

ENG 1648 Topics in Victorian Literature 4 Q.H.

Examines closely a single writer or group of writers (e.g., Wilde or the fantasists) or a theme (e.g., the movement toward modernism or decadence).

ENG 1649 World Literature I 4 Q.H.

Readings in world literature from the time of the Greeks through the Renaissance.

ENG 1650 World Literature II 4 Q.H.

Readings in world literature from the Renaissance through the modern period.

ENG 1651 Masterpieces of World Literature 4 Q.H.

Includes a selection of "great books," primarily by non-English authors, that have been central to the development of Western thought and culture.

ENG 1652 Twentieth-Century English Literature 4 Q.H.

Surveys the major literature of the period, including such writers as Shaw, Beckett, Yeats, T.S. Eliot, Auden, Conrad, Joyce, Lawrence, Greene, Lessing, Murdoch, and Fowles.

ENG 1657 Topics in Twentieth-Century English Literature 4 Q.H.

Examines closely the work of a single author or group of authors (e.g., Lawrence or post-war authors) or a topic (e.g., forms of modernism or imperialism).

ENG 1658 Introduction to Shakespeare 4 Q.H.

The course covers a selection of the major plays of Shakespeare, including both tragedies and comedies.

ENG 1659 Shakespeare's Comedies 4 Q.H.

Studies the romantic comedies, problem comedies, and comedies of regeneration, ranging from *The Merchant of Venice* to *The Tempest*.

ENG 1660 Shakespeare's Tragedies 4 Q.H.

Studies the nature of the tragic hero, the questioning of social norms, and the landscape of chaos, ranging from *Julius Caesar* to *King Lear*.

ENG 1661 Topics in Shakespeare 4 Q.H.

Examines closely such topics as the history plays, Shakespeare in performance, the Shakespearean hero, and psychological approaches to Shakespeare.

ENG 1662 The Bible 4 Q.H.

Study and analysis of selected books of the Bible. Texts are considered in their historical and literary contexts.

ENG 1667 Modern Poetry 4 Q.H.

Studies the origin and development of the modern tradition in poetry, its form and subject matter; includes such writers as Yeats, Hardy, Frost, Eliot, and Stevens.

ENG 1668 Topics in Modern Poetry 4 Q.H.

Focuses on a particular theme such as the poet's use of the past, his or her role in politics, a particular problem in modern poetry, or a particular group of modern poets.

ENG 1669 Studies in English Literature I 4 Q.H.

A seminar on a special topic in English literature, such as color symbolism in literature or John Donne and the metaphysical poets.

ENG 1670 Studies in English Literature II 4 Q.H.

Continuation of ENG 1669.

ENG 1671 Studies in American Literature I 4 Q.H.

Studies a special topic in American literature, such as the genteel tradition or American humor.

ENG 1672 Studies in American Literature II 4 Q.H.

Continuation of ENG 1671.

ENG 1677 Contemporary Poetry 4 Q.H.

Focuses primarily on British and American poetry since World War II. Includes such writers as

Roethke, Plath, Olson, Ammons, Hughes, and Larkin.

ENG 1678 African-American Literature I 4 Q.H.

A survey of the development and range of black American writers, emphasizing poetry and prose from the post-Civil War period to the present.

ENG 1679 African-American Literature II 4 Q.H.

A continuation of ENG 1678.

ENG 1690, ENG 1691 Junior-Senior Seminar (each) 4 Q.H.

(Open to all upperclass students in the College of Arts and Sciences; first preference is given to those needing the course to complete the major). The upperclass student with a strong competence in the humanities will have the chance to devise, pursue, and develop a response to an important issue in literature (e.g., the writer and the audience, the tradition of the new, style and meaning in literature, and literature and society). Class-time emphasis will be on discussing the broader implications of the issue dealt with by the seminar as well as on presenting independent research toward the end of the quarter. The role of the instructor will be that of moderator, research resource, and guide rather than that of lecturer.

ENG 1800, ENG 1801 Freshman English for Honors Students (each) 4 Q.H.

(Prereq. Special placement)
Equivalent of ENG 1110 and ENG 1111 for Honors Program freshmen. Meets during winter and spring terms so that both science and non-science majors in the Honors Program can enroll together. See English Department course listing under ENG 1110, ENG 1111 for description.

ENG 1802, ENG 1803, ENG 1804, ENG 1805 Junior-Senior Honors Program (each) 4 Q.H.

For details contact the Honors Office, 183 Holmes.

ENG 1806 English Adjunct Mini-Course 1 Q.H.

Weekly discussion on a literary topic of interest to professor and students. The topic may change each year. Written and oral presentations are required.

ENG 1810, ENG 1811 Directed Study (each) 4 Q.H.

Earth Sciences

GEO 1119 Marine Resources

4 Q.H.

The course provides a qualitative and quantitative survey of renewable and nonrenewable resources from the sea. Aspects covered include offshore oil and gas utilization, marine minerals, and tidal power; coastal zone recreational resources, including polluted beaches and artificial fishing reefs.

GEO 1120 Physical Oceanography

4 Q.H.

The course provides a description of the physical properties and composition of sea water, waves, tides, and ocean currents. The course discusses how these properties are measured by oceanographers and how they influence the earth's environment and climate.

GEO 1121 Biological Oceanography

4 Q.H.*

Topics include the productivity of animal and plant life in the various zones of the ocean; the growing economic importance of the oceans as a source of food for the expanding world population.

GEO 1128 Geological Oceanography

4 Q.H.

In this course the form of the ocean basins and their margins is related to the major processes forming them. Emphasis is placed on local landforms, including New England beaches, spits, barrier islands, and the continental shelf.

GEO 1140 Environmental Geology

4 Q.H.

The course discusses how geologic processes acting at the earth's surface interact with the human environment. Topics include river and ocean flooding, coastal erosion, landslides, land-use planning, and waste disposal.

GEO 1141 Geological Hazards and Resources

4 Q.H.

The course discusses how geologic processes originating deep inside the earth interact with the human environment. Topics include global crystal movements, volcanic and earthquake hazards, mineral resources, coal and oil, geo-thermal energy, resource management, and disposal of radioactive wastes.

GEO 1154 Planetary Astronomy

4 Q.H.

This course focuses on astronomy of the solar system. Topics include description of the planets and other objects with discussion of how our understanding has evolved from the days of naked-eye observation to the present era of interplanetary probes.

GEO 1156 Observational Astronomy

5 Q.H.

An introduction to systematic observation of the night sky, this course emphasizes observation and description of the patterns and motions of celestial bodies as seen with the unaided eye. Nightly viewing sessions required; supplemented by training sessions in the planetarium.

GEO 1210 North America and the Ice Age

4 Q.H.

This course focuses on description and history of ice-sheets that have advanced and retreated across the northern U.S.A. and Canada during the last three million years. Topics include evidence of past climatic change and predictions of future change, fluctuating sea levels, and the impact of these changes on man and the environment.

GEO 1212 Physical Geology

4 Q.H.

The course offers a systematic study of the materials comprising the earth. Topics emphasized include the processes by which rock is formed, transported, altered, and destroyed, as well as the nature and development of landscape. †

GEO 1213 Physical Geology Laboratory

1 Q.H.

(Prereq. GEO 1212; may be taken concurrently) Optional laboratory for GEO 1212, Physical Geology. Laboratory exercises pertain to mineral and rock identification and topographic and geologic map interpretation. Required for geology majors.

GEO 1222 Historical Geology

4 Q.H.

The physical and biological history of the earth is traced through geologic time. Major topics are the origin and evolution of life, mountain building, and continental drift. †

GEO 1223 Historical Geology Laboratory

1 Q.H.

(Prereq. GEO 1222; may be taken concurrently) Course offers a study of fossil representatives of major invertebrate phyla, application of fossils to studies of rock sequences, interpretation of geologic history from geologic maps and sedimentary rocks.

GEO 1250 Advanced General Geology

4 Q.H.

(Prereq. GEO 1212 and GEO 1222)

The course offers an introduction to new and advanced concepts, theories, and hypotheses in geology. Students participate actively in discussions, research papers, and individual projects.

GEO 1305 Rock Identification Laboratory

1 Q.H.

(Prereq. GEO 1310; may be taken concurrently)

The course provides self-paced laboratory exercises in the identification and classification of common rocks.

GEO 1310 Descriptive Mineralogy

5 Q.H.

(Prereq. Two quarters of chemistry)

The course provides a study of mineralogy, including crystallography and physical, chemical, and descriptive mineralogy of the common rock-forming minerals.

†Satisfies Core Curriculum Category II requirement.

*Lab fee required.

GEO 1311 Optical Crystallography 5 Q.H.

(Prereq. GEO 1310)

The theory and the practical methods of optical crystallography are studied, including the basic techniques for determining the optical constants of crystals using the polarizing microscope and immersion media.

GEO 1312 Petrography 5 Q.H.

(Prereq. GEO 1311)

Topics include description and identification of rocks and rock-forming minerals using thin-sections and the petrographic microscope; discussion of textural and mineralogic relationships.

GEO 1320 Field Geology 4 Q.H.

(Prereq. GEO 1212)

The course focuses on field techniques as a working guide for the approach, pursuit, and solution of geologic problems. Among the techniques considered are geologic map construction, stratigraphic section measurement, and field rock description. The laboratory consists of field research at a quarry, roadcut, or other geologic exposure.

GEO 1412 Geochemistry 4 Q.H.

(Prereq. One year of chemistry)

The course offers an evaluation of chemical processes important in the various geologic environments and their effects on the development of the lithosphere.

GEO 1414 Igneous and Metamorphic Petrology 5 Q.H.

(Prereq. GEO 1312)

The course covers the origin and distribution of igneous and metamorphic rocks as interpreted from their chemistry, mineralogy, and field relationships. Laboratory includes field and petrographic analysis of rock suites.

GEO 1416 Economic Geology 4 Q.H.

(Prereq. Dept. approval)

The course focuses on the genesis, associations, and occurrence of the major ore minerals, illustrated by studies of selected ore bodies of various types throughout the world.

GEO 1418 Structural Geology 5 Q.H.

(Prereq. GEO 1212 and GEO 1213)

Description and origin of large- and small-scale rock structures with emphasis on interpretation of the mechanics of deformation. Field and laboratory analyses of structural problems using maps, models, and rock specimens.

GEO 1420 Geophysics 4 Q.H.

(Prereq. PHY 1231)

This course offers a study of basic techniques of reflection and refraction seismology, gravity, aeromagnetic, and heat-flow techniques and the information they provide on the structure, composition, and dynamics of the earth's interior. Emphasis is placed on the application of these

techniques to the search for economic minerals in the earth's crust.

GEO 1424 Stratigraphy 5 Q.H.

(Prereq. GEO 1222)

Course offers study of paleoenvironments and sedimentary-basin analysis based on sedimentary structures, stratigraphic sequences, and fossils. Emphasis is on use of geologic sections, drill-cores, and well-logs. Laboratory interpretation of sedimentary rock suites, maps, and sections.

GEO 1428 Invertebrate Paleontology 5 Q.H.

(Prereq. GEO 1222)

Survey of the major invertebrate phyla preserved in the fossil record. Micro- and macro-evolutionary principles are discussed with consideration of adaptive and functional morphology and the role of paleoenvironments. Laboratory involves description and classification of fossil invertebrates.

GEO 1430 Sedimentation and Sedimentary Environments 5 Q.H.

The course offers a description of the physical processes of sedimentation and their role in the interpretation of modern and ancient sedimentary environments. Laboratory concentrates on the interpretation and description of the physical and textural properties of sediments and sedimentary rocks.

GEO 1432 Sedimentary Petrology 5 Q.H.

(Prereq. GEO 1311)

Topics include origin, classification, and petrography of the major groups of sedimentary rocks. Discussion of the environments of deposition of the nonclastic rocks. Laboratory concentrates on thin-section study of sedimentary rocks.

GEO 1434 Coastal Processes 4 Q.H.

(Prereq. GEO 1212)

The course examines the effect of coastal marine processes and the resultant coastal responses. Topics include the dynamics of waves and currents and the associated erosion, transportation, and deposition of sediment, forming beaches, barrier islands, and cliffed structures.

GEO 1436 Marine Geology 4 Q.H.

(Prereq. GEO 1212)

The balance between major sedimentary and tectonic forces in ocean basins and margins is compared to resulting ocean form. Topics include origin of continental shelves, shelf sedimentation and transport, deep-sea processes and sediments. Resource development of OCS oil, sand and gravel, and manganese nodules is evaluated.

GEO 1440 Geomorphology 4 Q.H.

(Prereq. GEO 1212)

The course focuses on the origin and evolution of landscape features by processes operating at or near the earth's surface.

GEO 1444 Glacial and Pleistocene Geology**4 Q.H.**

(Prereq. GEO 1222)

The course covers the processes of ice movement and the characteristics and distribution of erosional and depositional structures associated with past and present glaciers; introduction to Pleistocene chronology and correlations.

GEO 1450 Geology Seminar**4 Q.H.**

(Prereq. Major in geology or senior status)

The course offers in-depth study, on an individual or small-group basis, of a selected geologic topic. Both oral and written presentations are required.

GEO 1816, GEO 1817 Undergraduate Research**(each) 4 Q.H.**

The course offers independent research on a selected topic under the direct supervision of a faculty member. Open only to juniors and seniors majoring in geology, with the recommendation of the supervising faculty member and of the department.

GEO 1820, GEO 1821 Directed Study**(each) 4 Q.H.**

The course offers independent study of a specific topic not normally contained in the regular course offerings, but within the area of competence of a faculty member. Open to all students with the recommendation of a faculty member and departmental approval.

GEO 1824, GEO 1825 Special Studies**(each) 1 Q.H.**

The course offers an independent study of a specific topic. Open to all students with the recommendation of a faculty member and departmental approval.

GEO 1830, GEO 1831, GEO 1832, GEO 1833**Junior-Senior Honors Program (each) 4 Q.H.**

For details contact the Honors Office, 183 Holmes.

INT 1215 Into the Ocean World**4 Q.H.**

This course is a comprehensive interdisciplinary introduction to the oceans. The seas' complexity and the far-reaching consequences of our interactions with them demand an awareness of the many facets of marine study. The teaching team consists of specialists in the sciences, social sciences, humanities, and arts, each with an interest in marine issues and a commitment to bridging the gaps among disciplines. The course themes are as broad as the oceans, but when appropriate, we will focus on Boston harbor, a first step into the ocean world for those of us in this area.

INT 1216 A History of Seafaring**4 Q.H.**

This course surveys maritime transportation, trade, travel, exploration, and warfare from approximately 3500 B.C. to the end of the wooden boat era in the late nineteenth century. Prior to the widespread application of steam power on land and sea in the nineteenth century, ships were the fastest, safest, and most economical means of transporting large cargoes over long distances. Literary and art history sources are also introduced, along with several films on maritime archaeology.

INT 1217 Water, Water**4 Q.H.**

This course is an interdisciplinary introduction to our most precious resource. Water has affected our bodies, our planet, our history, and our culture. How we manage it will shape our future. Because of increasing demand, waste, and pollution, we are depleting — and risk destroying — the limited supply of usable fresh water. This course will look at water through scientific, historical, and cultural viewpoints, and survey contemporary water problems in all their dimensions — political, economic, and technological.

History

HST 1101 Western Civilization**4 Q.H.**

This course explores the major ideas and institutions of Western Civilization from ancient times to 1648.[†]

HST 1102 Western Civilization**4 Q.H.**

A continuation of HST 1101, covering the period since 1648.[†]

HST 1111 Advanced Western Civilization**4 Q.H.**

(Prereq. Invitation of instructor of HST 1101)

Students who demonstrate mastery of HST 1101 through consistently superior work may be invited

to work on an individual basis with their instructor. Together they will work out projects relating to the course.

HST 1112 Advanced Western Civilization**4 Q.H.**

(Prereq. Invitation of instructor of HST 1102)

Similar to HST 1111 in relation to HST 1101.

HST 1150 Introduction to Third World History (Group D)**4 Q.H.**

A survey of the history of the leading nations in Asia and Africa from early civilizations through twentieth-century independence movements and international relations.

[†]Satisfies Core Curriculum Category II requirement.

HST 1201 The United States to 1877 4 Q.H.

The course focuses on the history of the American people from 1763 to 1877, with an analysis of the American Revolution and the major political, constitutional, diplomatic, economic, and social problems of the new nation.[†]

HST 1202 The United States since 1877 4 Q.H.

The course offers a continuation of the survey of American history, with discussion of the emergence of an industrial economy, an urban society, world responsibility, and expanded federal government.[†]

HST 1241 The Historian's Craft 4 Q.H.

The ways in which the historian studies the past and the nature of historical statements are examined. Problems considered include research techniques, changing conceptions of historical knowledge, and the relation between the historian and the society in which he works.[†]

HST 1251 Social Science Methodology 4 Q.H.

The course offers an introduction to social science methodology and quantitative techniques used in historical analysis.

HST 1311 Ancient Greece (Group A) 4 Q.H.

Topics include the origins and development of Greek civilization; political evolution of Hellenic society from tribal to city-state organization; growth and application of Greek religious, political, and ethical ideas.

HST 1315 Ancient Rome (Group A) 4 Q.H.

This course examines Roman civilization in two sequences: the rise of Roman power under the Republic and the decline of Roman power under the Empire.

HST 1321 Medieval Europe (Group A) 4 Q.H.

Topics include Europe from the barbarian invasions to the late thirteenth century; the expansion of Christianity and the institutionalization of church and papacy; the emergence of the Holy Roman Empire, England, and France as political units; social, cultural, and economic developments.

HST 1331 Europe in the Age of the Renaissance (Group A) 4 Q.H.

The course focuses on Europe from 1300 to 1500, when alternatives to medieval institutions became increasingly apparent. Special attention to political, economic, and cultural changes in Italy and northern Europe.

HST 1336 Luther and His Age (Group A) 4 Q.H.

A study of Martin Luther, John Calvin, Henry VIII, Elizabeth I, and their political and religious contemporaries who between 1500 and 1650 overthrew the church's monopoly of religion, forged new relationships between princes and subjects, found new ways to create wealth, challenged the

traditional roles of men and women in families and communities, and created new attitudes toward national and international politics.

HST 1351 England to 1688 (Group A) 4 Q.H.

Topics include prehistoric Britain, the Anglo-Saxons, the Normans, the Plantagenets, the Tudors, and the Stuarts, with emphasis on the development of parliamentary institutions until the Glorious Revolution.

HST 1355 Tudor England (Group A) 4 Q.H.

This course offers a study of England from the late fifteenth to the early seventeenth century. Topics include an examination of the Tudor contribution to the development of political and social institutions; the Protestant Reformation and the relation between religion and politics; social and economic changes and their relation to the Elizabethan Renaissance. Particular emphasis is placed on intellectual and cultural developments and England's relation to Europe and the New World.

HST 1390 Population In European History (Group A or B) 4 Q.H.

This course provides an application of the principles of demography to European history from Roman times to the present, with attention to the interaction of birth, death, marriage, and migration rates with climate change, epidemic disease, war, economic developments, social upheaval, and political policy.

HST 1391 European Urban History to 1850 (Group A or B) 4 Q.H.

A review of urban development from the Greeks through the emergence of the industrial cities of nineteenth-century Europe. Individual cities such as Rome, Paris, and London are given special study.

HST 1392 Women In European History to 1815 (Group A or B) 4 Q.H.

This course offers an examination of changing sex roles from the early Christian era through the eighteenth century and an assessment of their significance within the social and political context of pre-industrial Europe. Topics include society's attitudes toward the sexes; family structure and marriage patterns; and male and female roles in economic life and in religious and political movements.

HST 1393 History of Science and Technology (Group A or B) 4 Q.H.

The course offers an interdisciplinary survey of the development of science and technology, integrating theories of the philosophy and sociology of science within a historical framework. Emphasis is placed on the environmental and ideological conditions that contribute to the birth and growth of the various sciences and to the relation between these conditions and technological innovation.

[†]Satisfies Core Curriculum Category II requirement.

HST 1394 Revolutions (Group A or B) 4 Q.H.

This course provides a review of the important theories of revolution and an analysis of the major early modern and modern revolutions, with a view to evolving a working theory of both political and generational revolutions for the twentieth century.

HST 1395 History of Flight and Space Travel (Group A, B, or C) 4 Q.H.

Beginning with the dreams of flight of the ancient Greeks and Leonardo da Vinci, the course traces the history of nonpowered flight from the balloon experiments of the Montgolfier brothers to contemporary hang gliders; powered flight from the Wright brothers to the SST; and rocketry and space travel from its earliest beginnings to "Enterprise."

HST 1397 Health and Sickness: Historical Perspectives (Group A, B, C, or D) 4 Q.H.

A survey of medical theories and the health care systems derived from them, from ancient times to the present. Medical theory and practice as related both to the general history of the time and to the particular political, economic, or social circumstances that influenced institutions for health care.

HST 1407 Europe, 1870-1921 (Group B) 4 Q.H.

The course focuses on Europe from the Franco-Prussian War to the post-World War I settlement: the growing tensions and rivalries and the declining certainties of the end of the nineteenth century, the origins of World War I, the War itself, the Russian Revolution, and the Peace of Paris.

HST 1408 Europe since 1921 (Group B) 4 Q.H.

The course focuses on Europe from the Versailles Settlement: the rise of totalitarianism, the Depression, the crises of liberalism and of the European mind, the Appeasement Era, World War II, the Cold War, the end of colonialism, and Europe today.

HST 1421 England since 1688 (Group B) 4 Q.H.

The course focuses on England from the Glorious Revolution to the present, with emphasis on the development of Parliament, the Industrial Revolution, nineteenth-century reaction and reform, the World Wars, and the rise of socialism.

HST 1424 Victorian England (Group B) 4 Q.H.

The economic, social, and political life of the English people during Victoria's reign.

HST 1425 The Decline of Great Britain (Group B) 4 Q.H.

The economic, social, and political life of the English people in the twentieth century.

HST 1428 Irish Civilization (Group B) 4 Q.H.

The course examines the history of Irish civilization from the earliest hero sagas and their impact on Irish values to the Irish independence movement, the prototype and model for many other twentieth-century liberation movements.

HST 1433 The French Revolution and Napoleon (Group B) 4 Q.H.

The course examines the history of France in the age of the *ancien régime* and the Enlightenment as background for the French Revolution and Napoleon.

HST 1434 Modern France (Group B) 4 Q.H.

A survey of the chief political, social, economic, intellectual, and cultural developments of France from the Revolution to the present.

HST 1435 History of Modern Italy (Group B) 4 Q.H.

The course offers a survey of the social, economic, and political development of the modern Italian state from the seventeenth century to the present. Emphasis on the problem of modernization.

HST 1441 Hitler's Germany (Group B) 4 Q.H.

This course offers a study of the origins and nature of Hitler's Third Reich, emphasizing the personal lives of Nazi leaders in an attempt to understand how seemingly ordinary people could enthusiastically promote wars of aggression and revel in genocidal policies.

HST 1451 Imperial Russia (Group B) 4 Q.H.

The course focuses on the emergence of Russia as a recognized European power, westernization and expansion in the eighteenth century, the impact of Napoleon, reform and revolution.

HST 1452 Soviet Russia (Group B) 4 Q.H.

The course examines forces molding the history of Russia since 1917, internal developments, and foreign relations.

HST 1461 Imperialism (Group B) 4 Q.H.

The course examines the rise and fall of the European colonial empires with an emphasis on the period of the late eighteenth to the twentieth century. Attention is given to theories underlying imperial expansion and the impact of imperialism on colonies and colonizers.

HST 1471 Class, Love, and Power In Western Europe (Group B) 4 Q.H.

The course provides an examination of social change in Europe since 1800 with emphasis on the interaction of industrialization, class movements, demographic trends, and revolutionary upheavals.

HST 1472 The Family In European History (Group B) 4 Q.H.

The course offers an examination of issues in the history of the European family from the late Middle Ages to the present. Topics include marriage and sexuality, child-rearing practices, the effect of industrialization and revolution on family life, the Victorian family, and the evolution of the modern family. Students will prepare their own family histories.

HST 1481 The Culture of Europe (Group B)**4 Q.H.**

The course provides an analysis of the culture of the West in the nineteenth and twentieth centuries, focusing on the conjunction of social, cultural, and psychological forces that encouraged or retarded creativity. Attempts will be made to show the interconnections among the arts, social sciences, and sciences within each of the periods covered.

HST 1485 Communism and Revolution**(Group B)****4 Q.H.**

The course focuses on the history of socialism and revolution from the early nineteenth-century utopias to the New Left of the 1960s.

HST 1491 Modern Western Economic History**(Group B or C)****4 Q.H.**

The course provides a survey of the development of the Western world examined within the framework of economic theory, with attention to social and political ramifications.

HST 1492 Capitalists and Capitalism (Group B**or C)****4 Q.H.**

This course provides an examination of capitalism from the Renaissance to the present with attention to the role of major individual capitalists such as the Rothschilds, Krupps, and Rockefellers, and to the impact of great historical forces such as war, the Protestant Reformation, and imperialism.

HST 1493 Work and Leisure (Group B or C)**4 Q.H.**

How we work and how we play are important determinants of how we live. This course examines the historical evolution of contemporary patterns of work and leisure across cultural, sexual, and class lines. Subjects include the impact of machine technology on the worker and the workplace; workers' organizing in unions and professional groups; changing concepts of the use of time; women's work and women's leisure; recreation and sports (both participant and spectator); and the rise of the café and the saloon as sociable institutions.

HST 1494 History and Film (Group B or C)**4 Q.H.**

The course offers an exploration of various historical issues as seen through the eyes of historians and filmmakers. Both acted and documentary films are shown in combination with readings from a variety of source and interpretive materials.

HST 1495 Technological Transformations of Society (Groups B, C, or D)**4 Q.H.**

The relation between technological innovations and the world in which they take place. Discussion of conditions necessary for discovery and innovation. Impact of technology on political, economic, and social environments.

HST 1496 War In the Twentieth Century (Group**B, C, or D)****4 Q.H.**

The course provides an analysis of the causes, prosecutions, and effects of the major wars fought in the twentieth century. The course concentrates on the First and Second World Wars and on the Vietnam War. Using film, simulations, and other materials, classes explore the economic, social, cultural, and psychological impacts of these wars as well as their political, diplomatic, and material aspects.

HST 1497 The World since 1945 (Group B)**4 Q.H.**

The course offers a thematic study of issues and movements that have influenced the world's history since the end of the Second World War. Subjects include the Cold War, the end of colonialism, urbanization, technology and ecology, cultures and counter-cultures, the "global village," and the prospect for human liberation.

HST 1501 Topics in American History**(Group C)****4 Q.H.**

Special topics in the history of the people of the United States from 1789 to the present.

HST 1510 Colonial America (Group C)**4 Q.H.**

The course covers the discovery and exploration of the New World, the settlement of the English colonies on the North American mainland, their development to 1763, and the origin of their clash with England.

HST 1511 The American Revolution (Group C)**4 Q.H.**

The course focuses on the coming of the American Revolution, its nature and progress, and its political, economic, and social aftermath.

HST 1514 The Civil War and Reconstruction**(Group C)****4 Q.H.**

The course focuses on the Civil War, its coming, its nature and progress, and the aftermath of Reconstruction.

HST 1516 The United States, 1890-1920**(Group C)****4 Q.H.**

Topics include populism, progressivism, World War I, and the reaction of the 1920s.

HST 1517 The United States, 1920-1945**(Group C)****4 Q.H.**

The course examines the Depression, the New Deal, World War II, and mid-century, emphasizing the clash between liberalism and conservatism and the movement from isolationism to interventionism.

HST 1518 The United States since 1945**(Group C)****4 Q.H.**

The course focuses on America's diverse responses to postwar challenges of urbanization, economic change, civil rights, and communism.

HST 1525 Topics in African-American History (Group C) 4 Q.H.

An in-depth examination of the major topics that have shaped the African-American experience. Among the areas to be included are slavery and its effects, the role of the antebellum free black, the Civil War and Reconstruction, black response to the new racism of the late nineteenth century, the W.E.B. DuBois-Booker T. Washington controversy; Marcus Garvey and the shaping of twentieth-century black nationalism, and the changing nature of the black revolution from Martin Luther King to Malcolm X and beyond.

HST 1527 Total Institution and the Individual: An Interdisciplinary Approach (Group C) 4 Q.H.

Using the tools of history, psychology, and sociology, this course examines the varying effects that total institutions (such as prisons, asylums, concentration camps, and the American slave plantation) have had on the human personality. An effort is made to develop a clearer understanding of how the human personality responds to such environments and of their stigmatic effects on the individual.

HST 1528 Crime and Punishment: A History of the Criminal Justice System In America (Group C) 4 Q.H.

The course examines the evolution of the criminal justice system in the United States, with special emphasis on the impact of English common law, the changing role of law enforcement officers, reform movements, the female offender, the black experience, and the changing meaning of law and order in the United States.

HST 1531 The Industrial Transformation of New England (Group C) 4 Q.H.

This course examines the process by which New England evolved from an agricultural to an industrial society and the effects of industry's move from the area. Field trips to historical industrial sites are planned.

HST 1532 History of Massachusetts (Group C) 4 Q.H.

This course focuses on the political, economic, social, and intellectual history of Massachusetts from the Constitution of 1780 to the present. The impact of war, immigration, and industrialization, and the orientation and integration of Massachusetts in the Union are studied.

HST 1533 History of Boston (Group C) 4 Q.H.

The history of Boston from colonial times to the present, with attention to the topographical growth and the ethnic composition of the city.

HST 1541 The Westward Movement (Group C) 4 Q.H.

The course examines America's westward movement and its impact on the political, social, and economic life of the nation.

HST 1543 American Urban History (Group C) 4 Q.H.

The course examines the development of urban society in the United States in the nineteenth and twentieth centuries, with emphasis on the effects of immigration and industrialization upon the politics, thought, and society of American cities.

HST 1552 American Reformers and Reform Movements (Group C) 4 Q.H.

The course provides an analysis of American reform, especially in the nineteenth century.

HST 1554 Women in America (Group C) 4 Q.H.

An analysis of women's economic and social roles from the colonial period to the present is offered in this course, with special attention to women's work, their roles in family and community, and nineteenth- and twentieth-century women's rights movements.

HST 1555 American Elites (Group C) 4 Q.H.

This course examines the life of elite individuals and groups in American society, especially in the nineteenth and twentieth centuries.

HST 1563 History of Sport in America (Group C) 4 Q.H.

The course provides a history of the major sports and their impact on American life.

HST 1571 American Business History (Group C) 4 Q.H.

The course examines the rise of business in America, the role of the corporation, horizontal and vertical combinations, business and labor, business and government.

HST 1572 History of the Professions (Group C) 4 Q.H.

The course examines the evolution of the classic professions of law and medicine in the nineteenth century and the emergence of new professions in engineering, nursing, accounting, and social work. Themes include professional-client, professional-employer, and professional-governmental relations as well as education, professional organizations, and sex-stereotyping.

HST 1575 History of Media in America (Group C) 4 Q.H.

The course focuses on mass communication in American history, with attention to the role of books, newspapers, magazines, films, radio, and television.

HST 1577 America and the Sea (Group C) 4 Q.H.

Topics include the history of exploration and discovery of America, the development of fishing, the rise of ocean commerce, the history of the American Navy.

HST 1578 The Automobile In America**(Group C)****4 Q.H.**

The course focuses on the impact of the automobile on American society in a historical context. Topics include inquiry into the abandonment of traditional prohibitions of motorized carriages and examination of the use of planning, taxes, and highway policies to foster the use of the automobile. The effect of the car on land use, recreation, and the economy. Contemporary issues such as pollution and energy.

HST 1582 The Growth of Government since**1935 (Group C)****4 Q.H.**

This course offers an examination of the expansion of government in recent America and its impact on society. The size and cost of government is discussed from historical and non-American perspectives, and the evolution of welfare, taxation, management of the economy, presidential power, intergovernmental relations, and bureaucracy from Franklin Roosevelt's time are analyzed.

HST 1585 American Diplomatic History**(Group C)****4 Q.H.**

The course focuses on the formation and administration of American foreign policy from the Revolution to the present.

HST 1586 American Military History (Group C)**4 Q.H.**

A survey of the complex relation between American society and war, from the age of muskets to the neutron bomb.

HST 1591 China and the United States**(Group C or D)****4 Q.H.**

The course offers an examination of the relations of China and the United States, including the period of the missionaries and opium traders; the era of special privileges; the Open Door policy; the first half of the twentieth century, when China became America's favorite protégé; and the years of strain, warfare, and finally accommodation after the Chinese communists came to power in 1949.

HST 1592 History of the Vietnam Wars**(Group C or D)****4 Q.H.**

A history of military conflict in Vietnam with attention to the rise of the Viet Minh during World War II, the struggle against the French in the first Indochina war, the impact of the Cold War, and the involvement of the United States after 1950 in Laos and Cambodia as well as Vietnam. Emphasis will be placed on the roles of communism and nationalism in Indochina and on the motives for American intervention. Films revealing American reaction to the escalating conflict will be shown.

HST 1601 Canadian History (Group D)**4 Q.H.**

The history of Canada from the time of European settlement to the present, with emphasis on Canadian relations with the United States and on the background of the Quebec separatist movement.

HST 1604 Modern Latin America (Group D)**4 Q.H.**

Latin America from the mid-nineteenth century to the present; dictatorial republics and the continuation of poverty and injustice; the struggles toward democracy; the rise of nationalism; the threat of communism; the relations between the United States and Latin America.

HST 1612 The Modern Middle East (Group D)**4 Q.H.**

Focus of this course is on the Middle East since 1800, with emphasis on the background of present problems.

HST 1613 Contemporary Middle East (Group D)**4 Q.H.**

The course focuses on political, economic, and social developments in the Middle East since the end of World War II.

HST 1614 The Middle East Today In Fact, Fiction, and Film (Group D)**4 Q.H.**

A study of social, economic, and political changes and conflict in the lives of ordinary people who have been experiencing the recent crises reported in the media. The course will focus on common experiences among various peoples—Turks, Armenians, Israelis, Arabs, and Iranians—and will emphasize significant themes: lifestyles, generational conflict, the changing role of women, ethnic or ideological conflict, and the prevalence of identity crises attending cultural and social disruption.

HST 1623 West African History (Group D)**4 Q.H.**

The political, economic, social, and cultural history of the people of West Africa.

HST 1624 East African History (Group D)**4 Q.H.**

The political, economic, social, and cultural history of the people of East Africa.

HST 1633 China since 1850 (Group D)**4 Q.H.**

The course focuses on the history of China from the Opium War to the present, with emphasis on the concepts and policies of the communist regime since 1949.

HST 1634 Communist China (Group D)**4 Q.H.**

Focus of this course is a close look at the policies and achievements of China since the communists won control in 1949. The major emphasis is upon the background for communist victory, the unique vision of Mao Zedong and his prescriptions for China, and the radical changes since Mao's death and the arrest of the "Gang of Four."

HST 1637 Japan since 1850 (Group D)**4 Q.H.**

The course examines the history of Japan since its opening by the West. Emphasis on westernization, the rise of Japan as a world power, and the Japanese experience since the defeat in World War II.

HST 1641 Recent Leaders of Asia (Group D)**4 Q.H.**

The course focuses on the lives and roles of recent leaders of Japan, China, India, and other Asiatic countries.

HST 1644 Third World Women (Group D)**4 Q.H.**

This course provides an exploration of the role of women in the less-developed Third World areas, with special emphasis on factors of change, development, and continuity.

HST 1652 Islam Resurgent (Group D)**4 Q.H.**

An analysis of what has been called "the militant revival of Islam" as a rallying point for reformist or revolutionary movements in the Muslim world. The course will include little-known Muslim areas outside the Middle East in Africa and Asia.

HST 1801 Directed Study**4 Q.H.****HST 1805 Approaches to History****4 Q.H.**

Students will undertake a major historical project based on the application of appropriate methodologies and upon the substantive understanding of a single subject chosen by the course instructor and announced in advance of the quarter. The course is rotated among the department's faculty. All history majors are required to take this course, though it is open to all upperclass students. All students must have completed 80 quarter hours of work before taking this course.

HST 1811, HST 1812, HST 1813 Junior-Senior**Honors Program (each) 4 Q.H.**

For details contact the Honors Office, 183 Holmes.

HST 1821 Fieldwork in History I**4 Q.H.**

(Prereq. HST 1101, HST 1102, HST 1201, HST 1202, and 16 Q.H. in other history courses)

This course offers directed work in historical societies, archives, museums, and other historical agencies. Students should consult the Department of History for details.

HST 1822 Fieldwork in History II**4 Q.H.**

(Prereq. HST 1821)

The course offers directed work in historical societies, archives, museums, and other historical agencies. Students should consult the Department of History for details.

INT 1150 Introduction to Women Studies:**Image, Myth, and Reality****4 Q.H.**

An introductory course in the study of women in society, this course encompasses the historical,

political, economic, and social processes that have created both the image and reality of women in contemporary society, and offers an overview of the many different disciplinary approaches to the study of women.

INT 1161 Introduction to Irish Studies**4 Q.H.**

Introduction to Irish Studies is taught from the perspective of a number of fields in one-week sequences: art, business, drama, history, literature, music, politics, and sociology. The purpose of the course is to introduce students to the important forces that have helped to shape contemporary Ireland and Irish-American culture.

INT 1215 Into the Ocean World**4 Q.H.**

This course is a comprehensive interdisciplinary introduction to the oceans. The seas' complexity and the far-reaching consequences of our interactions with them demand an awareness of the many facets of marine study. The teaching team consists of specialists in the sciences, social sciences, humanities, and arts, each with an interest in marine issues and a commitment to bridging the gaps among disciplines. The course themes are as broad as the oceans, but when appropriate, we will focus on Boston harbor, a first step into the ocean world for those of us in this area.

INT 1216 A History of Seafaring**4 Q.H.**

This course surveys maritime transportation, trade, travel, exploration, and warfare from approximately 3500 B.C. to the end of the wooden boat era in the late nineteenth century. Prior to the widespread application of steam power on land and sea in the nineteenth century, ships were the fastest, safest, and most economical means of transporting large cargoes over long distances. Literary and art history sources are also introduced, along with several films on maritime archaeology.

INT 1217 Water, Water**4 Q.H.**

This course is an interdisciplinary introduction to our most precious resource. Water has affected our bodies, our planet, our history, and our culture. How we manage it will shape our future. Because of increasing demand, waste, and pollution, we are depleting — and risk destroying — the limited supply of usable fresh water. This course will look at water through scientific, historical, and cultural viewpoints, and survey contemporary water problems in all their dimensions — political, economic, and technological.

Journalism

- JRN 1103 Newswriting I 4 Q.H.**
(Prereq. ENG 1275 with grade of C or better)
Functions of the editorial department and procedures in obtaining and writing news stories. Extensive news writing. Introduction to interviewing. Legal issues defined.
- JRN 1104 Newswriting II 4 Q.H.**
(Prereq. JRN 1103 with grade of C or better)
Practice in multi-source and breaking stories. Introduction to government and court reporting. Advanced work in interviewing, and writing under deadline pressure. Discussion of legal issues.
- JRN 1206 Editing 4 Q.H.**
(Prereq. JRN 1104 with grade of C or better)
Practice in copy editing and headline writing. Assignments in photo selection, cropping and cut-line writing. Introduction to page layout.
- JRN 1250 Interpreting the Day's News 4 Q.H.**
Study of the news of the day and the function of the newspaper, news magazine, and news broadcasts in American life. Topics include rights and responsibilities of the press and how news is gathered, processed, and disseminated by the various media. For non-majors as well as majors.
- JRN 1301 Basic Photojournalism 4 Q.H.**
(Prereq. JRN 1103)
Camera and darkroom procedures will be covered along with cropping, assignment techniques, theory, and photo caption methods.
- JRN 1305 Techniques of Journalism 4 Q.H.**
(Prereq. JRN 1104)
Writing in-depth and multiple-source stories requiring significant research. Introduction to investigative reporting. Feature writing. Review of legal issues.
- JRN 1320 Radio News Gathering and Reporting 4 Q.H.**
(Prereq. JRN 1103)
Writing and editing news for radio, with practice in interviewing, organizing news scripts, and integrating audio materials into broadcast.
- JRN 1336 Public Relations Principles 4 Q.H.**
(Prereq. Sophomore standing)
Principles, history, and methods of public relations; processes of influencing public opinion; responsibilities of the public relations practitioner; analyses of public relations programs.
- JRN 1350 Advertising Principles 4 Q.H.**
(Prereq. Sophomore standing)
Development, procedures, economic functions, and responsibilities of advertising; planning, research, production, and other elements that go into successful advertising.
- JRN 1421 Television Newswriting 4 Q.H.**
(Prereq. JRN 1103)
Writing for television news as opposed to writing for other news media; importance of the writer-reporter as field-producer and writer-producer; terms and language used in the production of TV news shows. Actual individual production of news shows; field trips to TV stations; guest lecturers from the TV news media.
- JRN 1422 Television News Production 4 Q.H.**
(Prereq. JRN 1103 and JRN 1421, or permission of instructor)
Techniques used by the electronic journalist and TV news producer. Students will have the opportunity to build a TV news show. Reporting with portable TV cameras and editing equipment.
- JRN 1428 Fundamentals of Sports Reporting 4 Q.H.**
(Prereq. JRN 1104)
Principles of news reporting applied to covering men's and women's sports for print and broadcast media. Emphasis is given to using sports reference materials, developing contacts, interviewing, and structuring the sports story. Investigative reporting in sports also is discussed.
- JRN 1430 The Role of Journalism in Sports 4 Q.H.**
Analysis of the impact of journalism on the institution of sports in this country and around the world. Sports reporting as a motivator and demotivator from Little League to college and professional levels. Effect of news media coverage on violence in organized sports, on America's physical fitness, and on other aspects of society are covered.
- JRN 1432 Local Government Reporting 4 Q.H.**
(Prereq. JRN 1104)
Coverage of town/city government, with emphasis on the "beat" approach to reporting public affairs. Practical, in-the-field experience is emphasized in such projects as town meetings, meetings of boards of selectmen, and other commissions and bodies transacting public business.
- JRN 1440 Design and Graphics 4 Q.H.**
(Prereq. JRN 1206)
Layout and design principles applied to newspapers, magazines and other print media. Type faces, copy measuring, dummyping, photo sizing, keeping copy flow charts. Application of design and graphics principles to advertising layout.
- JRN 1451 Advertising Copy Writing 4 Q.H.**
(Prereq. JRN 1103, JRN 1350)
Theory and techniques of creating advertising copy for newspapers, magazines, radio, television, and direct mail. Fact gathering, copy structure, and advertising design are emphasized.

JRN 1460 Public Relations Problems 4 Q.H.
(Prereq. JRN 1336)

Application of public relations techniques to problems; case studies in industry, labor, education, government, social welfare, and trade associations.

JRN 1501 History of Journalism 4 Q.H.

Development of American journalism from its European and English beginnings. Topics include: the colonial press, the great personal journalists of the nineteenth century, and the impact of major technological changes in mass communications media in the twentieth century. Some writing required.

JRN 1508 Law of the Press 4 Q.H.

Legal problems of libel, slander, and invasion of privacy; the balance between private rights and the public's "need to know."

JRN 1512 Journalism Ethics and Issues 4 Q.H.
(Prereq. JRN 1501)

Responsibilities of news media; ethical problems confronting decision makers in various journalistic fields: the principles found in codes of the American Society of Newspaper Editors, the Associated Press Managing Editors, the Society of Professional Journalists, and other organizations. Some writing required.

JRN 1522 Magazine Writing 4 Q.H.

(Prereq. JRN 1104 or consent of instructor)
Writing and free-lancing magazine articles; analyzing magazines as markets; selecting the best feature format—how-to-do-it, profile, personal experience, human interest, interpretive pieces, and others.

JRN 1530 Advanced Reporting 4 Q.H.
(Prereq. JRN 1104)

Advanced investigative and team reporting. Series stories and research; precision reporting.

JRN 1552 Advertising Practice 4 Q.H.
(Prereq. JRN 1451)

Preparation of advertising for print and broadcast

media, including campaign planning and space and time buying and scheduling. Product research, consumer surveys, and measuring the effects of advertising.

JRN 1561 Public Relations Practice 4 Q.H.
(Prereq. JRN 1103 and JRN 1336)

Practices and techniques employed in the field, including organization of events and functions. Campaign planning, research, and media relationships are studied.

JRN 1575 Publication Production and Management 4 Q.H.
(Prereq. JRN 1206)

Examination of the organizational structure, production methods, and management procedures of print media companies. Interaction of business, advertising, production, and circulation departments.

JRN 1617 The Constitution and Mass Communications 4 Q.H.

The meaning of freedom of the press, explored through study and discussion of the evolving First-Amendment interpretations of the United States Supreme Court.

JRN 1635 Journalism and the Mass Media 4 Q.H.

Seminars featuring well-known professionals from major newspapers, radio-TV stations, wire services, magazines, photography, and public relations. An up-to-date, in-depth exploration of techniques and theories used in various media.

JRN 1870, JRN 1880 Seminar 4 Q.H.
(Prereq. Upperclass standing)

Discussions and readings on topics of current significance in various journalistic fields.

JRN 1890, JRN 1891 Directed Study in Journalism 4 Q.H.**JRN 1892 Topics 4 Q.H.****JRN 1894, JRN 1895, JRN 1896, JRN 1897, JRN 1898 Honors in Journalism 4 Q.H.**

Modern Languages

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. If approved by the Department of Modern Languages and the dean's office, equivalent course work acquired elsewhere may be considered acceptable to satisfy these prerequisites. The following courses are offered in English, and no knowledge of a foreign language is required to take them: LNF 1510, LNF 1511, LNF 1512, LNF 1513, LNI 1510, LNI 1511, LNI 1512, LNR 1500, LNR 1510, LNR 1511, LNS 1500, LNS 1501, and LNS 1510. Locate these courses under the appropriate heading for course descriptions. Language majors interested in obtaining major credit for any of these courses should consult their instructor.

Chinese

LNC 1101 Elementary Chinese I 4 Q.H.

This is a course in "Mandarin" Chinese designed to acquaint the student with features of the spoken

and written language. Grammar, oral performance, and simple characters are stressed. For students who wish to speak another dialect of Chinese, consult instructor for proper placement.

LNC 1102 Elementary Chinese 4 Q.H.
(Prereq. LNC 1101)

This course is a continuation of LNC 1101. Grammar and spoken and written forms of the language are studied.

LNC 1103 Intermediate Chinese I 4 Q.H.
(Prereq. LNC 1102)

This course is a continuation of LNC 1102. More advanced features of the language. Continued study of characters.

LNC 1104 Intermediate Chinese II 4 Q.H.
(Prereq. LNC 1103)

This course is a continuation of LNC 1103. More advanced work in grammar, conversation, and characters.

LNC 1801 Directed Study in Chinese 4 Q.H.**French****LNF 1101 Elementary French I 4 Q.H.**

Designed for students with very little or no prior knowledge of French, this course provides a lively introduction to basic oral expression, listening comprehension, and elementary reading and writing. The audiolingual approach, using practical vocabulary drawn from realistic situations, aims at good pronunciation and ease in response. Each lesson incorporates helpful information about daily life in France and the varied cultures within the world of French speakers. Laboratory practice complements classwork, enables students to work aloud at their own speed, reinforces their acquisition of essential structures, and acquaints them with a vast library of audiovisual resources.

LNF 1102 Elementary French II 4 Q.H.
(Prereq. LNF 1101)

This course's intent is to continue and broaden beginners' exposure to the "four skills"—oral comprehension, speaking, reading, and writing French—so that the linguistic tools needed to understand and function in foreign contexts—at home, abroad, and in the world of literature and film—may be acquired.

LNF 1103 Intermediate French I 4 Q.H.
(Prereq. LNF 1102 or equiv.)

This course, for students who wish to further their audio-lingual skills and improve their reading and writing, combines a review and continued study of grammar essentials with oral, writing, and language laboratory practice. Varied readings include journalistic, cultural, and modern literary texts. Classes are conducted in French as much as possible so that students may exercise their new skills.

LNF 1104 Intermediate French II 4 Q.H.
(Prereq. LNF 1103)

This course uses the fundamentals of French to promote effective self-expression through speak-

ing and writing and to explore the idiomatic aspects of the language. Through progressive class discussions and oral and written commentaries, students analyze a contemporary French novel or a French cultural reader, screenplay, or collection of short stories. The course strives, first, to help students read and comprehend modern French writing with confidence, and to be able to talk and write about it in good French; and second, to provide them the opportunity to prepare for advancement to courses beyond the intermediate level.

LNF 1107 Reading French in the Arts and Sciences 4 Q.H.
(Prereq. LNF 1102 or equiv.)

This course is designed for those students who wish to develop their reading skills, without regard to other aspects of the language such as speaking or writing. To this end, the grammar necessary for reading is stressed, together with vocabulary building. Scientific and nonscientific texts are read. This course may also provide assistance to students, graduate and undergraduate, who need to pass a reading examination to fulfill specific degree requirements. However, it should be made clear that this course is not a substitute for LNF 1103 or LNF 1104 (Intermediate French).

LNF 1201 French Composition and Conversation I 4 Q.H.

This course is designed for qualified students who wish to work on improving their proficiency in speaking and writing French through oral reports, class discussions, compositions, and an advanced review of fundamentals. Grammar work focuses on the students' particular needs as well as the nuances of the language. Varied readings in a range of styles—popular to literary—provide insight into French life and culture. Conducted in French.

LNF 1202 French Composition and Conversation II 4 Q.H.
(Prereq. LNF 1201 or equiv.)

A continuation of LNF 1201, with emphasis on individual work, oral presentations, discussions, related grammar, and analysis of readings. Conducted in French.

LNF 1203 Advanced French Proficiency I 4 Q.H.
(Prereq. LNF 1201 and LNF 1202 or equiv.)

Emphasis is on further vocabulary building and mastery of fine points of grammar through written composition, prepared oral reports, and reading and discussion of articles from current periodicals. Special attention is given to the latest trends in spoken French, the study of idioms and proverbs, as well as selected examples of "argot" (slang).

LNF 1204 Advanced French Proficiency II**4 Q.H.**

(Prereq. LNF 1201 and LNF 1202 or equiv.)

This course is the continuation of LNF 1203. In addition to further study in the areas covered in course LNF 1203, each student is expected to pursue one major project throughout the course, to be completed at the end of the quarter—such as planning and writing an original French magazine with one article to be submitted each week of the term.

LNF 1225 Introduction to the French-Speaking World**4 Q.H.**

(Prereq. LNF 1104 or equiv.)

This course offers a cultural introduction to the French-speaking world through the study of various reading selections in the textbook *Le Monde Français*. These selections, which stress vocabulary building and proper usage of a wide variety of grammatical forms, deal with the traditional backgrounds and aspects, as well as the contemporary and "pop" aspects, of the cultural heritage of the world's French speakers. France will be the main, but not the exclusive, focus of this course.

LNF 1231 Masterpieces of French Literature I**4 Q.H.**

(Prereq. LNF 1104 or equiv.)

This course provides an introduction to French poetry, theatre (both comedy and tragedy), novels, and autobiographies through the study of key works from the Middle Ages and Renaissance through the Age of Enlightenment. The course includes such writers as Villon, Molière, Racine, Voltaire, and Rousseau. The course, conducted largely in French, aims to acquaint students with a critical approach to reading; to help them improve their reading, speaking, and writing skills; and to apply these new skills to a greater understanding and appreciation of major French contributions to Western culture. Group discussions are encouraged in an effort to bring out the relation between the texts and contemporary issues.

LNF 1232 Masterpieces of French Literature II**4 Q.H.**

(Prereq. LNF 1104 or equiv.)

A continuation of LNF 1231, which is not necessarily a prerequisite. The course presents some of the most interesting and significant works of literature from the Romantic Age to the present. Among the readings are an "existential" play by Musset, poetry by Baudelaire and Verlaine, and fiction by Flaubert, Camus, and Robbe-Grillet. For a description of methodology, see LNF 1231.

LNF 1305 French Literature in the Splendid Century**4 Q.H.**

(Prereq. LNF 1232 or equiv.)

This course presents a study of the nondramatic literature of seventeenth-century France from the baroque through the classical periods. The course studies a rich and diverse body of writing encom-

passing philosophy, poetry, the table, the novel, and epistolary writing. Among the authors treated are Descartes, Pascal, La Rochefoucauld, La Fontaine, Boileau, Mme. de Sévigné, and Mme. de La Fayette. Offered every other year.

LNF 1306 French Theatre in the Splendid Century**4 Q.H.**

(Prereq. LNF 1232 or equiv.)

This course offers a study of the dramatic literature of seventeenth-century France, from the baroque through the classical periods. Tragedy is studied in the works of Corneille and Racine; comedy, in those of Molière. Offered every other year.

LNF 1307 French Literature of the Eighteenth Century I**4 Q.H.**

(Prereq. LNF 1232 or equiv.)

The eighteenth century in France, known as the Age of Enlightenment, was an age of challenge to established authority in all areas, and an age of changing ideas and ideals. This intellectual and political vitality is reflected in the representative works of Marivaux, Montesquieu, Prevost, and Voltaire. Class discussions, oral and written reports. Conducted in French, but English is allowed. Offered every other year.

LNF 1308 French Literature of the Eighteenth Century II**4 Q.H.**

(Prereq. LNF 1232 or equiv.)

Toward the latter half of the century we begin to see both the achievements brought about by the spirit of enlightenment and at the same time the awakening of the romantic sensibility, particularly in such authors as Diderot, Rousseau, St. Pierre, Laclos, and Beaumarchais. Class discussions, oral and written reports. Conducted in French, but English is allowed. Offered in alternate years.

LNF 1309 French Literature of the Nineteenth Century I**4 Q.H.**

(Prereq. LNF 1232 or equiv.)

Romanticism is treated as a major cultural phenomenon affecting man's view of his world and the way he expresses experience. In this context, the course examines romanticism in poetry and drama, as well as its continuation into the realist novel. Among the authors read are Victor Hugo in poetry and the drama, and Honoré de Balzac in the novel. In addition there are selections from other writers who represent aspects of romanticism and realism. Conducted principally in French. Offered every other year.

LNF 1310 French Literature of the Nineteenth Century II**4 Q.H.**

(Prereq. LNF 1232 or equiv.)

This course deals with the reaction against romanticism: aestheticism and personal modes of expression in contrast to the enthusiasm of the early romantics. The course deals with a novel by Gustave Flaubert and the verse of Charles Baudelaire in *Les Fleurs du Mal*, and the poets who followed in

Baudelaire's footsteps. Flaubert and Baudelaire are seen as precursors of modern literature. Conducted principally in French. Offered every other year.

LNF 1311 French Literature of the Twentieth Century I 4 Q.H.

(Prereq. LNF 1232 or equiv.)

This course offers a study of the major movements in the narrative and dramatic prose writers prior to World War II, including Alain-Fournier, Proust, Claudel, Gide, Mauriac, and Saint Exupéry. Students are required to read a work from each author, discuss it in class, and present oral and written reports. Conducted in French, but English may be used. Offered in alternate years.

LNF 1312 French Literature of the Twentieth Century II 4 Q.H.

(Prereq. LNF 1232 or equiv.)

This course focuses on the trends in postwar fiction, with particular consideration of the struggle to find meaning in an absurd world. Analysis of significant works by Giraudoux, Montherlant, Sartre, Camus, Anouilh, Ionesco, and Beckett. Oral and written reports, class discussions. Conducted in French, but English may be used. Offered in alternate years.

LNF 1400 Seminar: Critical Methodology and Practice in French Literature 4 Q.H.

(Prereq. Excellent reading knowledge of French)

The seminar treats one modern French writer in terms of a critical methodology developed in the first part of the seminar based on modern critical practice.

LNF 1401 Seminar: Trends in Modern French Literature 4 Q.H.

(Prereq. Excellent reading knowledge of French)

The seminar examines a trend in modern French literature and develops a critical methodology useful for this analysis.

LNF 1510 Modern Philosophical French Literature in Translation 4 Q.H.

Camus and Sartre are considered to have been the spokesmen for their generation's philosophical concerns. Works by these two authors are studied in the course and a working knowledge of existentialism is developed from them. Course given in English.

LNF 1511 The Theme of Solitude In French Literature 4 Q.H.

Course conducted in English. Texts read in English translation (those who wish to do so may read them in French). The multiple facets of the theme of solitude are traced from the beginnings of French literature to the present. Viewed as a source of both wonder and anguish, solitude is studied in its various manifestations, including banishment, imprisonment, expatriation, and seclusion. The phenomena of moral and spiritual

solitude are examined as well. Among authors studied are Charles d'Orleans, Du Bellay, Rousseau, Chateaubriand, Hugo, Verlaine, Mauriac, and Camus.

LNF 1512 Masterpieces of Modern European Fiction 4 Q.H.

This course is conducted in English and focuses on modern European authors, including Dostoevski, Mann, Kafka, Proust, Gide, and Camus. Their works are viewed as commentaries on their respective societies and, more generally, as investigations of the human condition.

LNF 1513 French Seminar: Voltaire and Rousseau 4 Q.H.

This course offers an opportunity to study and compare the two great figures of the eighteenth century. Through an analysis of their works, students may determine how, by their contrasting interests, personalities, and views of society, these writers contributed to fundamental changes in the political, philosophical, and literary world of their time—and ours. Class discussion, oral and written reports. Conducted in English. Offered in alternate years.

LNF 1801, LNF 1802, LNF 1803, LNF 1804, LNF 1805 Directed Study (each) 4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors and to juniors and seniors.

LNF 1820, LNF 1821, LNF 1822, LNF 1823 Junior-Senior Honors Program (each) 4 Q.H.

For details contact the Honors Office, 183 Holmes.

Spanish

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere may be considered acceptable to satisfy these prerequisites.

LNS 1101 Elementary Spanish I 4 Q.H.

The course includes presentation of essentials of correct usage through acquisition of basic skills in reading, writing, speaking, and aural comprehension.

LNS 1102 Elementary Spanish II 4 Q.H.

(Prereq. LNS 1101 or equiv.)
Continuation of language instruction with increasing attention to vocabulary and skills relevant to persons who wish to become involved with the Hispanic world.

LNS 1103 Intermediate Spanish I 4 Q.H.

(Prereq. LNS 1102 or equiv.)
Included are completion of basic grammatical us-

age. Reading of contemporary Hispanic plays; oral and written communication based upon assigned readings.

LNS 1104 Intermediate Spanish II 4 Q.H.

(Prereq. LNS 1103 or equiv.)

The course offers intensive reading of topics of current interest; conversation practice utilizing skills acquired in previous course work; and composition practice based upon varied assigned topics.

LNS 1105 Conversational Spanish I 4 Q.H.

(Prereq. LNS 1104 or equiv.; open to nonmajors only)

Emphasis is on helping students develop the ability to speak and comprehend Spanish. Particularly able students may be accepted after having completed only LNS 1103. In this case, LNS 1105 may be used to satisfy the language requirement.

LNS 1106 Conversational Spanish II 4 Q.H.

(Prereq. LNS 1105 or equiv.; open to nonmajors only)

Continuation of LNS 1105, with continuing emphasis on the development of oral facility in Spanish. Particularly able students may be accepted after having completed only LNS 1104.

LNS 1130 Intensive Spanish 8 Q.H.

This course encompasses the same material covered in LNS 1101 and LNS 1102. Students with language-learning ability and a commitment to the study of foreign languages are encouraged to take the course. Students are expected to assimilate the material at an accelerated pace. This is a two-sequence course; students must enroll in both sequences. Satisfactory completion of this course enables the student to take LNS 1103 if he or she wishes.

LNS 1201 Spanish Composition and Conversation I 4 Q.H.

This course offers practice in writing and speaking Spanish, including written and oral resumes, prepared speeches and themes, and impromptu speaking and writing. A review of the more subtle problems of grammar.

LNS 1202 Spanish Composition and Conversation II 4 Q.H.

(Prereq. LNS 1201 or equiv.)

This course offers further practice in oral and written Spanish; continued study of problems of advanced Spanish grammar.

LNS 1203 Advanced Spanish Proficiency I 4 Q.H.

(Prereq. Permission of instructor)

This course is designed for those preparing to enter the teaching profession, as well as qualified advanced students. Advanced elements of Spanish syntax, with emphasis upon achieving superior speaking, reading, and writing skills.

LNS 1204 Advanced Spanish Proficiency II

4 Q.H.

(Prereq. LNS 1203 and permission of instructor)
Continuation of aims and goals of LNS 1203.

LNS 1231 Masterpieces of Spanish Literature I 4 Q.H.

(Prereq. LNS 1104 or equiv.)

An introductory course tracing the development of Spanish literature from its beginnings in the Middle Ages (las jarchas, *El poema del Cid*, *El libro de buen amor*, *La Celestina*, etc.) through the Renaissance and Baroque periods or Golden Age (Garcilaso de la Vega, the picaresque novel, the mystics, Cervantes, Lope de Vega, Calderon, etc.). Classes are conducted in Spanish.

LNS 1232 Masterpieces of Spanish Literature II 4 Q.H.

(Prereq. LNS 1104 or equiv.)

A continuation of LNS 1231, surveying the literature of eighteenth-, nineteenth-, and twentieth-century Spain. Included are the literary movements of romanticism, realism, and the generation of '98. Classes are conducted in Spanish.

LNS 1301 Spanish Literature of the Middle Ages 4 Q.H.

(Prereq. LNS 1232 or equiv.)

The course offers selections from the major works of the Middle Ages, from *El poema del Cid* to the *Libro de buen amor*. Conducted in Spanish.

LNS 1303 Spanish Literature of the Fifteenth and Sixteenth Centuries 4 Q.H.

This course examines selections from the major works of the fifteenth and sixteenth centuries. Some of the works to be considered are *La Celestina*, *Lazarillo de Tormes*, and *El Romancero*. Conducted in Spanish.

LNS 1305 Cervantes and His Times 4 Q.H.

(Prereq. LNS 1232 or equiv.)

The course examines selections from Cervantes' minor works (the *Entremeses* and the *Novelas ejemplares*); emphasis, however, is on *Don Quixote*, Spain's greatest literary masterpiece. Conducted in Spanish.

LNS 1306 Spanish Golden Age Theatre 4 Q.H.

(Prereq. LNS 1232 or equiv.)

The course examines plays by the outstanding dramatists of the seventeenth century: Lope de Vega, Calderon de la Barca, Tirso de Molina, Ruiz de Alarcon, and others. Conducted in Spanish.

LNS 1309 Spanish Literature of the Nineteenth Century I 4 Q.H.

(Prereq. LNS 1232 or equiv.)

The course includes readings in the prose, poetry, and drama of the romantic period, including selections from el Duque de Rivas, Larra, Espronceda, Zorrilla, and Becquer. Conducted in Spanish.

LNS 1310 Spanish Literature of the Nineteenth Century II 4 Q.H.

(Prereq. LNS 1232 or equiv.)

This course offers a study of some of the major novelists of the second half of the nineteenth century, such as J. M. de Pereda, Juan Valera, Emilia Pardo Bazan, and B. Perez Galdos. Conducted in Spanish.

LNS 1311 Spanish Literature of the Twentieth Century I 4 Q.H.

(Prereq. LNS 1232 or equiv.)

The course examines selections from the writings of the Generation of '98: Unamuno, Valle-Inclan, Pio Baroja, Benavente, Azorin, and the Machado brothers.

LNS 1312 Spanish Literature of the Twentieth Century II 4 Q.H.

(Prereq. LNS 1232 or equiv.)

The course focuses on prose and poetry of modern writers, such as Ortega y Gasset, Perez de Ayala, Garcia Lorca, Juan Ramon Jimenez, Gironella, and Jose Cella.

LNS 1315 Latin American Literature 4 Q.H.

(Prereq. LNS 1232 or equiv.)

The course focuses on early Latin American literature: the literature of the colonial period and the early nineteenth century, based primarily on selections from an anthology.

LNS 1316 Latin American Literature 4 Q.H.

(Prereq. LNS 1232 or equiv.)

This course focuses on modern Latin American literature; readings from nineteenth- and twentieth-century prose and poetry.

LNS 1400 Spanish Seminar 4 Q.H.

This course is designed primarily for majors who have progressed to the upper-level literature courses in Spanish. However, nonmajors who show exceptional background may be admitted with the instructor's permission. The course focuses upon a narrowly defined theme (i.e., a single author, a single work, or a single theme), which students are asked to explore in depth; students are expected to present a final paper based upon individual research.

LNS 1401 Seminar in Spanish Literature 4 Q.H.

(Prereq. Permission of instructor)

This is an upper-level literature course designed primarily for majors, although nonmajors who show exceptional background in Spanish may be admitted. Students are expected to read a selected group of Galdos's novels, and the class meetings will concentrate on a detailed discussion and analysis of the works read. There are collateral readings as well, and a final paper on a topic to be selected by the student.

LNS 1402 Seminar in the Contemporary Spanish Theatre 4 Q.H.

(Prereq. LNS 1232 or permission of instructor)

In contrast to the typical bourgeois theatre of consumption in Spain, there exists a number of dramatists committed to revealing the tragic social and existential aspects of the human condition. Emphasis is placed on authors such as Vallejo, Sartre, the members of the *generacion realista*, and the "underground" playwrights. Classes are conducted in Spanish. Class participation as well as oral and written projects required. Alternates yearly with LNS 1401.

LNS 1500 Backgrounds in Hispanic Culture I 4 Q.H.

A multimedia approach is utilized to present the rich panorama of the humanities from Altamira to modern times. A reading knowledge of Spanish is helpful but not required, since the course is conducted in English. Field trips, concerts, guest speakers, and individual study projects enhance this exploration of Spanish creativity.

LNS 1501 Backgrounds in Hispanic Culture II 4 Q.H.

This course spans the time from pre-Columbian days to the present in Latin America, exploring culture, traditions, and attitudes. A multimedia approach with field trips and guest lecturers. Conducted in English.

LNS 1510 Saints and Sinners: The Vision of Women in the Middle Ages and the Renaissance 4 Q.H.

Topics include the attainment of and the atonement for love; society's changing attitude toward women as reflected in the literature of the times. Selected fabliaux, short stories, poems, and plays from Boccaccio, Chaucer, Ruiz, Rojas, Machiavelli, Lope de Vega, Celderon, Quevedo, Racine, Middleton, as well as women writers. Reference is made to historical and sociological materials. This course is offered in English. All required readings are in translation.

LNS 1512 The Don Juan Figure in Literature 4 Q.H.

A seminar course dealing with the emergence and development of the Don Juan figure in Western literature. The course will be taught in English, although it will focus upon many works which were originally written in other languages (they will be read in English translation). It will attempt to analyze the character of Don Juan, beginning with his first appearance in the theater of seventeenth-century Spain, and following his development well into the twentieth-century. The course will strive to develop an appreciation and understanding of the character of Don Juan through the centuries, and to analyze the similarities and the differences that may be seen in the character from one cultural milieu to another.

LNS 1801, LNS 1802, LNS 1803, LNS 1804, LNS 1805 Directed Studies (each) 4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors and to juniors and seniors.

LNS 1820, LNS 1821, LNS 1822, LNS 1823 Junior-Senior Honors Program (each) 4 Q.H.
For details contact the Honors Office, 183 Holmes.**LNL 1235 Applied Linguistics 4 Q.H.**

The course explores the process of language learning and the nature of this experience for infants and adults. Emphasis is on the child's ability to master successfully the complex essentials of its first language by the age of five, and how the development of cognitive capacity and language-learning ability are related. The role of the parent and of the physical environment will also be discussed. Other topics include second-language learning, contrastive analysis, learning English as a second language or dialect, sign language, the significance of "errors," learning strategies, and a survey of language-teaching methods.

German

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

LNG 1101 Elementary German I 4 Q.H.

This course is designed to provide instruction in the basic grammatical structure of German through practice in listening comprehension, speaking, reading, and writing. Instruction is provided in the classroom and in the language laboratory. No previous study of German necessary. (Special sections of this course are run for business students.)

LNG 1102 Elementary German II 4 Q.H.
(Prereq. LNG 1101 or equiv.)

A continuation of LNG 1101, this course emphasizes helping students to increase their knowledge of the basic grammatical structure of German and to develop additional flexibility in the four language skills. (Special sections of this course are run for business students.)

LNG 1103 Intermediate German I 4 Q.H.
(Prereq. LNG 1102 or equiv.)

This course offers a comprehensive review and reinforcement of the major aspects of German grammar and usage; continues to explore the four major skills of listening comprehension, speaking, reading, and writing; introduces the student to the

reading of contemporary literary texts, including a full-length play—*Biedermann und die Brandstifter*, by the Swiss playwright Max Frisch.

LNG 1104 Intermediate German II 4 Q.H.
(Prereq. LNG 1103 or equiv.)

The course aims at helping students enlarge vocabulary and develop increased flexibility in the four basic language skills. Included are completion of grammar review, continued exposure to modern literary texts. One full-length play is read—*Der Besuch der alten Dame*, by the contemporary Swiss dramatist Friedrich Dürrenmatt. Successful completion of this course entitles the student to choose from among the upper-level course offerings in the areas of German literature and/or composition and conversation.

LNG 1107 Reading German 4 Q.H.

This course is designed for those students who wish to develop their reading skills, without regard to other aspects of the language, such as speaking or writing. The grammar necessary for reading is stressed, together with vocabulary building; scientific and nonscientific texts are read. This course may provide assistance to students, graduate and undergraduate, who need to pass a reading examination to fulfill specific degree requirements.

LNG 1201 German Composition and Conversation I 4 Q.H.

(Prereq. LNG 1104 or equiv.)
This course strives to develop facility in speaking and writing German and stresses active use of the language. Students are provided an opportunity for practice in listening comprehension through German language films or tape-recorded interviews with native German speakers; expansion of vocabulary through guided group discussions on topics of general interest; and development of language skills in areas of individual interest through preparation of oral reports in German. Compositions are assigned on a weekly basis and grammar is reviewed as needed. Utilization of language laboratory. Recommended for students preparing for co-op in Germany.

LNG 1202 German Composition and Conversation II 4 Q.H.

(Prereq. LNG 1201 or equiv.)
Continuation of German LNG 1201 in content and format with emphasis on independent communication skills. Recommended for students preparing for co-op in Germany.

LNG 1203 Advanced German Proficiency I 4 Q.H.

(Prereq. LNG 1201 and LNG 1202, or permission of instructor)

The course offers intensive training in spoken and written German with the aim of providing students an opportunity to increase vocabulary and de-

velop flexibility in the use of the language. Included are student-led discussions of German society and current affairs based on readings of current journals and periodicals; weekly written assignments; review and practice of grammar where necessary.

LNG 1231 Masterpieces of German Literature I 4 Q.H.

(Prereq. LNG 1104 or equiv.)

The course includes a survey of the major trends in the development of German literature from the Hildebrandslied to Martin Luther. In addition, reading of selected works of major authors of the twentieth century such as Hauptmann, Kafka, Mann, Brecht, Durrenmatt, and Boll. Choice of works to be read in a particular term will be based partially on theatre performances or film showings planned in the Boston area. Class attendance of these performances is anticipated. Recommended as an introductory step to literature courses LNG 1307 and above. Offered every other year, alternating with LNG 1232.

LNG 1232 Masterpieces of German Literature II 4 Q.H.

(Prereq. LNG 1104 or equiv.)

This course includes a survey of the major trends in the development of German literature from Martin Luther to the present, including selected works of major authors of the nineteenth and twentieth centuries. Choice of works to be read in a particular term will be based partially on theatre performances or film showings planned in the Boston area. Class attendance of these performances is anticipated. Recommended as an introductory step to literature courses LNG 1307 and above. Offered every other year, alternating with LNG 1231. May be taken before LNG 1231.

LNG 1307 Classical Period of German Literature 4 Q.H.

(Prereq. LNG 1232 or equiv.)

The course provides background and general survey of the period from 1750 to 1800, with particular emphasis on the works of Lessing and Schiller. Among the dramas read are Lessing's *Minna von Barnhelm* and *Nathan der Weise*, and Schiller's *Maria Stuart* and *Die Jungfrau von Orleans*. Lectures (in German) and reports.

LNG 1308 The Works of Goethe 4 Q.H.

(Prereq. LNG 1232 or equiv.)

The course includes drama, prose writing, and lyric poetry of Goethe: *Faust*, Part I; *Hermann Und Dorothea*; *Egmont*; and *Iphigenie auf Tauris*. Lectures (in German) and reports.

LNG 1309 German Literature of the Nineteenth Century 4 Q.H.

(Prereq. LNG 1232 or equiv.)

The course offers background and general survey of German literature of the nineteenth century, with particular attention to prose and lyric poetry.

The lyric poetry includes poems of all the important romantic poets, beginning with Holderlin, Tieck, Novalis, and extending through Morike. Among the prose works discussed are *Novellen* by Eichendorff, Tieck, Chamisso, Kleist, Fougue, Keller, Meyer, and Ludwig. Lectures (in German) and reports.

LNG 1310 German Drama of the Nineteenth Century 4 Q.H.

(Prereq. LNG 1232 or equiv.)

Dramas read are selected from Germany's foremost dramatists of the nineteenth century, including Kleist, Hebbel, Grillparzer, and Ludwig. Lectures (in German) and reports.

LNG 1311 German Literature of the Twentieth Century 4 Q.H.

(Prereq. LNG 1232 or equiv.)

The course includes lyric poetry and prose works of important German writers of the twentieth century, including Schnitzler, Hauptmann, Mann, and Kafka. Lectures (in German) and reports.

LNG 1312 German Drama of the Twentieth Century 4 Q.H.

(Prereq. LNG 1232 or equiv.)

Plays are selected from those by important dramatists of the twentieth century, including Schnitzler, Hauptmann, Sudermann, Hofmannsthal, Wedekind, Kaiser, Toller, and Brecht. Lectures (in German) and reports.

LNG 1315 The German Lyric 4 Q.H.

(Prereq. LNG 1232 or equiv.)

The course offers a survey of the German lyric from the twelfth century to the present. Analysis and interpretation of representative selections from major lyric poets such as Walther von der Vogelweide, Gerhard, Fleming, Gryphius, Klopstock, Claudius, Goethe, Schiller, Holderlin, Eichendorff, Brentano, Heine, Morike, Storm, Meyer, Rilke, and Brecht. Background of the development of the German lyric, movements, and types. Class discussions and reports.

LNG 1316 The Dramatic Works of Franz Grillparzer 4 Q.H.

(Prereq. LNG 1232 or equiv.)

The course includes reading, analysis, and interpretation of representative works of Franz Grillparzer, Austria's greatest dramatist: *Sappho*, *Des Meeres und der Liebe Wellen*, *Der Traum ein Leben*, *König Ottokars Glück und Ende*, and the novella, *Der arme Spielmann*. Collateral readings, discussions, and reports.

LNG 1801, LNG 1802, LNG 1803, LNG 1804, LNG 1805 Directed Studies (each) 4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately cov-

ered by existing courses. Priority is given to language majors and to juniors and seniors.

LNG 1820, LNG 1821, LNG 1822, LNG 1823

Junior-Senior Honors Program (each) 4 Q.H.

For details contact the Honors Office, 183 Holmes.

Russian

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

LNR 1101 Elementary Russian I 4 Q.H.

The course includes essentials of grammar, practice in pronunciation, progressive acquisition of a basic vocabulary, idiomatic expressions.

LNR 1102 Elementary Russian II 4 Q.H.

(Prereq. LNR 1101)

Continuation of grammar study; oral and written exercises.

LNR 1103 Intermediate Russian I 4 Q.H.

(Prereq. LNR 1102)

Designed to help further the student's knowledge of Russian through oral and written work; the study of grammar and reading texts of moderate difficulty.

LNR 1104 Intermediate Russian II 4 Q.H.

(Prereq. LNR 1103)

Continuation of work and aims of LNR 1103.

LNR 1107 Scientific Russian 4 Q.H.

(Prereq. LNR 1104 or equiv.)

The course offers readings of Russian texts in mathematics, physics, chemistry, astronomy, biology, and medical science. Designed to help prepare the student for the department reading examination in his/her chosen field. As far as possible, texts are selected on the basis of the students' needs and interests.

LNR 1201 Russian Composition and Conversation I 4 Q.H.

(Prereq. LNR 1104 or equiv.)

Designed to assist students in developing skills in speaking and writing by means of detailed grammar review and extensive use of audio-visual media. Conducted in Russian.

LNR 1202 Russian Composition and Conversation I 4 Q.H.

(Prereq. LNR 1201 or equiv.)

A continuation of LNR 1201 with an increased emphasis on speaking the colloquial Russian idiom. Conducted in Russian.

LNR 1203 Advanced Russian Proficiency I 4 Q.H.

(Prereq. LNR 1202 or equiv.)

Emphasizes speaking and writing skills through

the study of Russian word formation and derivation. Weekly compositions or oral reports are required. Conducted in Russian.

LNR 1204 Advanced Russian Proficiency II 4 Q.H.

(Prereq. LNR 1203 or equiv.)

Emphasizes speaking and writing skills through the study and use of Russian idioms and colloquialisms. Conducted in Russian.

LNR 1205 Stylistics and Advanced Grammar Analysis I 4 Q.H.

(Prereq. LNR 1104 or permission of instructor)

Designed for students pursuing a major or minor in the Russian language; focuses on modern usage of the Russian language through newspaper and magazine articles and short stories.

LNR 1206 Stylistics and Advanced Grammar Analysis II 4 Q.H.

(Prereq. LNR 1205 or permission of instructor)

Continues goals of LNR 1205 and also focuses on helping students improve listening comprehension through the use of extensive laboratory work.

LNR 1309 Russian Short Stories of the Nineteenth Century 4 Q.H.

(Prereq. LNR 1104 or equiv.)

The course offers detailed analysis of selected representative short stories read in Russian; study of the development of this genre.

LNR 1315 Russian Expository Prose 4 Q.H.

(Prereq. LNR 1104)

Selected readings of lectures, speeches, essays, and critical studies by outstanding Russian scholars.

LNR 1316 Russian Folklore 4 Q.H.

(Prereq. LNR 1104)

Various genres of Russian folk literature are read in Russian. Readings are supplemented with lectures and tape recordings.

LNR 1317 Russian Poetry 4 Q.H.

(Prereq. LNR 1104)

The major works of important classical and modern poets are read in Russian and analyzed.

LNR 1500 Backgrounds In Russian Culture 4 Q.H.

Designed to offer the student a view of Russian culture and civilization, the course utilizes guest speakers, films, field trips, and discussions. Conducted in English.

LNR 1510 The Works of Alexander Pushkin In Translation 4 Q.H.

This course offers a survey and analysis in English of Pushkin's artistic prose, lyric poetry, correspondence, friendships, and major literary influences.

LNR 1511 Russian Literature in Translation**on 4 Q.H.**

A companion to LNR 1510, this is a survey and analysis in English of some of the works of Tolstoi, Dostoevski, Chekhov, and others.

LNR 1801, LNR 1802, LNR 1803, LNR 1804, LNR 1805 Directed Studies**(each) 4 Q.H.**

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors and to juniors and seniors.

LNR 1820, LNR 1821, LNR 1822, LNR 1823**Junior-Senior Honors Program****(each) 4 Q.H.**

For details contact the Honors Office, 183 Holmes.

Italian

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

LNI 1101 Elementary Italian I**4 Q.H.**

For the beginner who wants instruction in the essentials of Italian grammar and the opportunity to practice speaking and reading the language.

LNI 1102 Elementary Italian II**4 Q.H.**

(Prereq. LNI 1101 or equiv.)

Continued study of grammar and basic language skills. Practice in more advanced conversation and reading.

LNI 1103 Intermediate Italian I**4 Q.H.**

(Prereq. LNI 1102 or equiv.)

Review of grammar. Progressively more intensive practice in oral and written communication. Reading will be from selected modern texts.

LNI 1104 Intermediate Italian II**4 Q.H.**

(Prereq. LNI 1103 or equiv.)

Review of grammatical difficulties, with attention given to current idiomatic forms. Greater emphasis on self-expression. Reading of short stories or a modern novel.

LNI 1201 Italian Composition and Conversation I**4 Q.H.**

(Prereq. LNI 1104 or equiv.)

For students who have mastered the fundamentals of the language. There will be no study of grammar as such. The course aims at helping students strengthen speaking and writing ability through an analysis of the language, oral and written reports, and general discussions on a variety of topics. Conducted entirely in Italian.

LNI 1202 Italian Composition and Conversation II**4 Q.H.**

(Prereq. LNI 1201 or equiv.)

Continuation of LNI 1201, with stress on individual

work, free discussions, and compositions. Conducted entirely in Italian.

LNI 1231 Masterpieces of Italian Literature I**4 Q.H.**

(Prereq. LNI 1104 or equiv.)

Introductory course in Italian literature covering the *Trecento* to the seventeenth century. An analysis will be made of major trends and writers beginning with the *doice stil nuovo*, Dánte's *Vita Nuova*, and continuing with readings from Petrarca's *Canzoniere*, Boccaccio's *Decameron*, and Machiavelli's *La Mandragola*. Discussion of the readings, oral and written reports. Conducted basically in Italian, but students are allowed to express themselves in English.

LNI 1232 Masterpieces of Italian Literature II**4 Q.H.**

(Prereq. LNI 1104 or equiv.)

Continuation of LNI 1231, but may be taken separately. This course concentrates on authors from the eighteenth to the twentieth centuries, such as Goldoni, Leopardi, Verga, Pirandello, Moravia, Levi, and Buzzati. A novel, a play, or poetry selections from each author will be discussed. Oral and written reports. Conducted basically in Italian, but students may use English.

LNI 1311 Italian Literature of the Twentieth Century I**4 Q.H.**

(Prereq. LNI 1232 or equiv.)

Reading and discussion of some of the novels, plays, and poems from a variety of literary trends and styles that evolved between the turn of the century and World War II. Among the authors studied are Verga, Pascoli, D'Annunzio, Pirandello, Deledda, and Svevo. Oral and written reports. The course will be conducted basically in Italian, but students may use English. Offered in alternate years.

LNI 1312 Italian Literature of the Twentieth Century II**4 Q.H.**

(Prereq. LNI 1232 or equiv.)

The postwar period to the present. Many important authors have arisen since the early forties, and their books reflect the preoccupations, moods, and aspirations of our changing times. Among the writers considered in this course are Moravia, Silone, Vittorini, Pavese, Guareschi, Buzzati, Sciascia, Ungaretti, Montale, and Quasimodo. Oral and written reports are required. English may be used, but the course will be conducted basically in Italian. Offered in alternate years.

LNI 1510 The Works of Dante in Translation I**4 Q.H.**

This course considers briefly the cultural background and various literary schools that influenced Dante. His life, his character, and minor works are discussed. The *Vita Nuova* and the first cantica of the *Divina Commedia*, the "Inferno," are read and analyzed in some detail. This course is intended for students of any background or major.

Bilingual texts are used so that students with a background in Italian and others, may refer to the original for added interest and enrichment. Classes are conducted in English.

LNI 1511 The Works of Dante in Translation II 4 Q.H.

This is a continuation of LNI 1510, but may be taken separately. The other two parts of the *Divina Commedia*, "Purgatorio" and "Paradiso," are studied in detail. The course is open to anyone. Bilingual texts used. Classes conducted in English.

LNI 1512 Italian Seminar: Pirandello 4 Q.H.

By viewing reality in man's world and man's personality with strikingly new insights, Pirandello contributed a new dimension to our understanding of human nature and brought about significant

changes to the traditional conception of the theatre. This course examines the originality and art of Pirandello by a close study of some of his great plays and short stories. Class discussions, oral and written reports. Conducted in English. Offered in alternate years.

LNI 1801, LNI 1802, LNI 1803, LNI 1804, LNI 1805 Directed Studies (each) 4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors and to juniors and seniors.

LNI 1820, LNI 1821, LNI 1822, LNI 1823 Junior-Senior Honors Program (each) 4 Q.H.
For details contact the Honors Office, 183 Holmes.

Mathematics

MTH 1000 Mathematics Preliminaries I 4 Q.H.
(Prereq. Permission of course coordinator)

The purpose of this course is to supply, together with MTH 1010, the high school math background necessary for a student to survive in MTH 1101, MTH 1106, or MTH 1113. Material includes the arithmetic of signed numbers, fractions, decimals, and percents; algebraic manipulation and solution of simple equations; elementary word problems; laws of exponents.

MTH 1010 Mathematics Preliminaries II 4 Q.H.

The purpose of this course is to supply, together with MTH 1000, the high school math background necessary for a student to survive in MTH 1101, MTH 1106, or MTH 1113. Topics include quadratic equations and systems of equations; graphing (including slope of a line and vertex of a parabola); more word problems; either logarithms, trigonometry, or some of both at the instructor's discretion; in winter and spring quarters the material covered in MTH 1000 will be assumed; in the fall quarter there is an overlap with MTH 1000 on solving equations, word problems, and laws of exponents.

MTH 1101 Basic Mathematics 4 Q.H.

The course examines systems of linear equations and their graphs. Graphing systems of linear inequalities in two variables with application to linear programming. Introduction to matrices, matrix multiplication, and vectors.

MTH 1103 Basic Mathematics 4 Q.H.

Topics include introduction to probability, sample spaces with equiprobable events, permutations and combinations, conditional probability. Random variables, introduction to Markov processes.

MTH 1106 Fundamentals of Mathematics 4 Q.H.

This course examines how to solve various kinds of algebraic equations: linear, quadratic, and linear systems in two and three unknowns. Applications to word problems such as motion, mixture, and variational problems. The concept of function, graphs, line slopes, and graphs of polynomials. Some elementary trigonometry and vectors in the plane.

MTH 1107 Functions and Basic Calculus 4 Q.H.

The course provides an introduction to differential calculus. Elementary rules of differentiation with application to graph sketching and to maximum and minimum problems. Exponential and logarithmic functions with applications to problems in compound interest, population growth, and radioactive decay.

MTH 1108 Calculus 4 Q.H.

The course offers a review and continuation of differential calculus, graphing and differentiation of trigonometric functions, introduction to integral calculus with applications to geometric problems and to differential equations.

MTH 1113 College Mathematics for Business**4 Q.H.**

Topics include sets, rectangular coordinates and graphs, functions and functional notation, linear and quadratic functions, exponential and logarithmic functions, systems of linear equations, summations, inequalities, permutations and combinations, elementary probability concepts, arithmetic and geometric progressions, simple and compound interest annuities.

MTH 1114 Fundamentals of Mathematics**4 Q.H.**

(Prereq. MTH 1113 or equiv.)

Topics include matrices; Gaussian elimination inverses of matrices; systems of linear inequalities; feasible regions; graphical solution of linear programming problems; limits; derivatives; differentiation of polynomials; differentiation of exponential and logarithmic functions; maxima, minima, and points of inflection; optimization in nonlinear problems; marginal analysis of cost revenue and profit functions.

MTH 1120, MTH 1121 Calculus (each) 6 Q.H.

This course sequence is designed to assist students in overcoming deficiencies in precalculus mathematics without losing ground in the MTH 1123 sequence. The two quarters review high school algebra, introduce trigonometric functions, and cover the material in MTH 1123 and MTH 1124. The five meetings per week include lecture and homework review sessions. Students are placed in this course by request or on the basis of their College Board scores and the results of an orientation-week diagnostic test.

MTH 1123 Calculus**4 Q.H.**

This is a first course in calculus in one variable, primarily for engineering students. Functions, graphs, lines, limits, continuity, derivatives, chain rule, curve sketching, related rates, and maxima-minima problems are included.

MTH 1124 Calculus**4 Q.H.**

Continuation of MTH 1123. The integral in one variable with applications to areas, volumes, lengths, work, pressure, etc. Trigonometric, exponential, and logarithmic functions.

MTH 1125 Calculus**4 Q.H.**

Continuation of MTH 1124. Further techniques of integration, elementary differential equations, polar coordinates, and further applications are included.

MTH 1133 Calculus for Biology Majors I**4 Q.H.**

This is a first course in calculus with applications to biology, ecology, and medicine. Differentiation, curve sketching, anti-differentiation, and exponential functions are included.

MTH 1134 Calculus for Biology Majors II**4 Q.H.**

(Prereq. MTH 1133)

Continuation of MTH 1133. Topics include exponential growth and decay; integration and area; rules for differentiation; and functions of several variables, with LaGrange multipliers, total differentials, and the method of least squares.

MTH 1135 Calculus for Biology Majors III**4 Q.H.**

(Prereq. MTH 1134)

Continuation of MTH 1134. Topics include the natural logarithm; trigonometric functions; techniques of integration, including numerical methods and differential equations, with separation of variables and qualitative methods.

MTH 1137 Discrete Mathematics I**4 Q.H.**

(Prereq. MTH 1123)

Proof methods: induction, case analysis, contradiction. Binary, octal and hexadecimal numbers. Modular arithmetic. Sets, relations, equivalences, functions. Combinations, permutations, elementary counting, and discrete probability. Elementary graph theory.

MTH 1143 Calculus**5 Q.H.**

This course is designed primarily for mathematics, physics, and chemistry majors. Syllabus for MTH 1143 through 1145 includes derivatives and integrals of one-variable functions; applications to curve sketching, maxima and minima problems, area, moments, simple volumes, etc.; approximation methods, including numerical integration, root finding, Taylor series, and power series. Students will also be required to master the use of the computer to make value tables and plot curves and to implement simple numerical algorithms.

MTH 1143 (H) Calculus for Honors Science Majors**5 Q.H.**

An equivalent to MTH 1143, this course is designed to expose the student to a broader range of mathematics concepts while also presenting the basic calculus material that students learn in the nonhonors sections of MTH 1143. The course is especially intended for freshmen honors science majors.

MTH 1144 Calculus II**5 Q.H.**

(Prereq. MTH 1143) Continuation of MTH 1143.

MTH 1145 Calculus III**5 Q.H.**

(Prereq. MTH 1144) Continuation of MTH 1144

MTH 1144, MTH 1145 Calculus for Honors Science Majors**(each) 5 Q.H.**

Continuation of MTH 1143 for winter and spring terms.

MTH 1150 Probability, Statistics, and the Computer 4 Q.H.

(Prereq. Nonmath majors)

The course presents a computer-oriented introduction to statistical methods, with applications in the social and life sciences. Topics include descriptive statistics, elementary probability, correlation and regression, and the fundamentals of statistical inference (confidence intervals and hypothesis testing) with a minimum of mathematical derivations. A statistical computer package such as MINITAB or SPSS is used in solving supplementary problems.

MTH 1152 Statistical Thinking 4 Q.H.

An introduction to the statistical style of thinking for students without mathematical sophistication or who ordinarily don't like mathematics. Readings will be assigned from a wide variety of sources. Extensive class discussion and homework problems (some on a computer) will teach the students to use statistics and to critically evaluate the use of statistics by others. Topics include descriptive statistics, statistical tests, confidence intervals, regression, and sampling. †

MTH 1160 Introduction to Computers I 4 Q.H.

(Prereq. Nonmath majors)

This course has two goals: (1) to introduce computers and consider their applications, and (2) to introduce computer programming so that the uses and limitations of computers can be discussed intelligently. Small programs will be written and run. Applications such as sorting, searching, data processing, simulation, and artificial intelligence will be covered.

MTH 1163 Introduction to Computers and Computation 4 Q.H.

Course offers an introduction to problem solving with the use of computers. Students are expected to design, write, debug, and test programs in BASIC programming language. Course includes application of programming to a wide variety of problems, including statistical analysis of data, plotting, artificial intelligence, and text processing.

MTH 1166 Numerical Methods with a Hand Calculator 4 Q.H.

Course covers the use of scientific hand calculator. Topics include the meaning and use of most of the keys, e^x , \ln , \log , and the trigonometric functions; RPN and algebraic notation; and a variety of computations that can be done easily on a scientific calculator—least squares, compound interest, solutions of equations, iteration techniques, difference equations, Euler's Method, difference quotients, and numerical integration. Techniques to promote speed and accuracy in using calculators for course work problems are emphasized. This course is intended for students who may take science courses.

MTH 1172 Introduction to Computer Science 4 Q.H.

This is a second course in programming, dealing with problem solving in the context of computing. Structured programming using PASCAL language. Correctness, clarity, and reliability of programs are stressed. †

MTH 1182 Mainstreams of Mathematics 4 Q.H.

This course traces the development of mathematical thought by focusing on some of its most exciting aspects. Individual projects supplement lectures and readings, enabling students with diverse backgrounds to rediscover mathematics. The level is nontechnical; no more than high school algebra and geometry is assumed. Topics vary from year to year, but may include mathematical games, a wide variety of puzzles, ancient number systems, logic and computers, calculus and the scientific revolution, art and symmetry. The course may be used to satisfy the math-science distribution requirement but not any major requirements.

MTH 1191 College Algebra and Trigonometry I 4 Q.H.

(Prereq. B.E.T. majors only)

Topics include fundamental algebraic operations, complex numbers, radicals and exponents, functions, linear and quadratic equations, irrational equations, inequalities, variation, roots of polynomial equations.

MTH 1192 College Algebra and Trigonometry II 4 Q.H.

(Prereq. MTH 1191; B.E.T. majors only)

Topics include logarithms; trigonometric functions of angles in degrees and radians, trigonometric identities and equations, right triangles, oblique triangles, complex numbers in trigonometric form, systems of equations, determinants.

MTH 1193 Calculus I 4 Q.H.

(Prereq. MTH 1192; B.E.T. majors only)

Plane analytic geometry; differentiation of algebraic functions; rate, motion, maximum and minimum problems; derivatives of higher order; curve sketching; basics in functions, limits, and continuity. (Not equivalent to MTH 1123)

MTH 1194 Calculus A 4 Q.H.

(Prereq. MTH 1193; B.E.T. majors only)

Topics include applications of derivatives to curve sketching; antidifferentiation; the definite integral, with applications; calculus of nonalgebraic functions—logarithmic, exponential, and trigonometric; calculus of inverse trigonometric functions; techniques of integration; indeterminate forms; L'Hospital's rule. (Not equivalent to MTH 1124)

†Satisfies Core Curriculum Category II requirement.

MTH 1195 Calculus B 4 Q.H.

(Prereq. MTH 1193; B.E.T. majors only)

Topics include polar coordinates, vectors in a plane, calculus of functions of several variables, partial differentiation, multiple integrals, infinite series, vector analysis, introduction to differential equations. (Not equivalent to MTH 1125)

MTH 1196 Differential Equations 4 Q.H.

(Prereq. MTH 1195)

Topics include ordinary differential equations—standard types of the first order, linear differential equations, especially with constant coefficients; Laplace transforms; series solutions of differential equations; Fourier series and orthogonal functions.

MTH 1203 History of Mathematics 4 Q.H.

Topics include development of the various branches of mathematics; lives of outstanding mathematicians; growth of mathematical knowledge and its relation to culture.

MTH 1212 Linear Programming 4 Q.H.

(Prereq. one year of college mathematics)

Introduction to concepts and techniques of linear programming, game theory, stochastic processes. Application to economics, social sciences, and other related fields.†

MTH 1221 Mathematical Analysis IV-V 5 Q.H.

(Prereq. Freshman calculus or equiv.)

This course is designed to help prepare transfer students for numerical analysis and differential equations. Calculus of one and several variables. Linear algebra, vector-valued functions, multiple integration, infinite series, Taylor's theorem, and complex numbers.

MTH 1223 Calculus 4 Q.H.

(Prereq. MTH 1125)

Topics include solid analytic geometry, vectors in 3-space, partial derivatives with applications, multiple integration.

MTH 1224 Calculus 4 Q.H.

(Prereq. MTH 1223)

Topics include linear algebra, power series.

MTH 1225 Mathematical Analysis 4 Q.H.

(Prereq. MTH 1224)

This course examines ordinary differential equations, with emphasis on methods of solution. Includes first-order equations, Laplace transform, second-order linear equations, and systems of first-order linear equations. (Intended primarily for engineering students.)

MTH 1226 Mathematical Analysis 4 Q.H.

(Prereq. MTH 1225)

Topics include numerical methods for solving ordinary differential equations, Fourier series, and selected partial differential equations by separation of variables. (Intended primarily for engineering students.)

MTH 1233 Mathematical Models in the Life Sciences 4 Q.H.

(Prereq. One year of calculus)

The focus of this course is the derivation and solution of mathematical models in biology, psychology, and the social sciences. Topics may include population dynamics, diffusion processes, pollution control systems, neural networks, and mathematical genetics.

MTH 1237 Discrete Mathematics II 4 Q.H.

(Prereq. MTH 1137, MTH 1223)

Elementary number and group theory. Introduction to fields. Finite fields. Coding Theory, Hamming and BCH codes. Counting arguments.

MTH 1243 Calculus and Linear Methods I 4 Q.H.

(Prereq. MTH 1145)

The course focuses on methods of calculus and vector analysis to study curves, surfaces, and functions of several variables. Topics include parameterization of lines and planes, tangents and normal vectors, partial derivatives, maxima and minima problems, linear approximations, and tangent planes. Some linear algebra.

MTH 1244 Calculus and Linear Methods II 4 Q.H.

(Prereq. MTH 1243)

Continuation of MTH 1243. Topics include multiple integration, line integrals, and exact differentials; various forms of Stoke's theorem; more linear algebra.

MTH 1245 Differential Equations and Linear Methods I 4 Q.H.

The course focuses on ordinary differential equations and linear algebra. First-order equations, higher- (primarily second-) order linear differential equations, systems of linear differential equations. Linear algebra includes eigenvalues and eigenvectors primarily for two-dimensional systems. Applications of ordinary differential equations.

MTH 1246 Differential Equations and Linear Methods II 4 Q.H.

(Prereq. MTH 1245)

Topics include analysis of linear partial differential equations (wave equations, heat equation and potential equation). Ordinary differential equations with boundary values. Fourier analysis, orthogonal functions. Also, numerical methods and other topics in ordinary differential equations.

MTH 1301 Linear Algebra I 4 Q.H.

(Prereq. MTH 1246 or permission of instructor)

Topics include vectors and vector spaces, including function spaces, subspaces. Lengths, angles, scalar products; volumes, determinants. Linear independence and dependence, dimension, linear and affine maps, kernel and image. Algorithms: row operations, double triangular form, inversion. Introduction to linear maps. In particular, characteristic polynomials, eigenvalues, and eigenvectors in low dimensions.

†Satisfies Core Curriculum Category II requirement.

Note: Students who have not completed MTH 1143-MTH 1246 should inform the course instructor of their backgrounds.

MTH 1302 Linear Algebra II

4 Q.H.

(Prereq. MTH 1301)

The course focuses on detailed study of linear maps. Part I: Symmetric maps and quadratic forms. Isometries and skew-symmetric maps. Decomposition of general linear maps using symmetric maps and isometries. Part II: Polynomials evaluated on linear maps. Generalized eigen-spaces. Jordan form. As time permits, an introduction to computational methods with emphasis both on geometry underlying algorithms and on practical advantages and limitations. A survey of related areas in mathematics in which linear ideas play a role is included.

Note: Upper-level students who have not completed the MTH 1243-MTH 1246 program may take MTH 1301-MTH 1302. Such students should inform the course instructor regarding their particular backgrounds.

MTH 1311 Analysis I

4 Q.H.

(Prereq. MTH 1246 or permission of instructor)

The course examines the theoretical foundations of calculus: limits, measure, continuity, and related concepts. Analysis I and II are intended to serve as a bridge between the MTH 1243-MTH 1246 calculus sequence and the more advanced analysis courses, such as MTH 1347-MTH 1348, MTH 1351, and MTH 1370-MTH 1371.

MTH 1312 Analysis II

4 Q.H.

(Prereq. MTH 1311) Continuation of MTH 1311.

The course focuses on calculus, applying the concepts introduced in Analysis I.

MTH 1321 Introduction to Groups and Their Applications

4 Q.H.

Topics include examples of groups (symmetry groups, permutation groups, matrix groups, cyclic groups) and their subgroups. Finite groups and orders of subgroups. Homomorphisms and normal subgroups. Applications to some of the following, depending on time and interest: geometry, number theory, crystallography, physics, and combinatorics.

MTH 1322 Topics in Rings, Fields, and Number Theory

4 Q.H.

Topics include algebraic properties of the integers and rational, real, and complex numbers. Commutative rings, ideals, integral domains, and other quotient fields. Polynomial rings. Quadratic extension fields. Gaussian integers. Other topics as time permits.

MTH 1327 Optimization and Mathematical Game Theory

4 Q.H.

(Prereq. Some linear algebra, e.g., MTH 1301; or permission of instructor.)

Topics include convex sets in Euclidean n -space, linear and nonlinear programming, zero-sum

games, dynamic programming. Students are encouraged to program selected solution methods for a computer.

MTH 1330 Number Theory

4 Q.H.

(Prereq. MTH 1301 or permission of instructor)

An introduction to the elementary methods of analytic number theory, this course focuses on divisibility, congruences, arithmetical and multiplicative functions, quadratic reciprocity, and equivalent formulations of the prime number theorem.

MTH 1337 Foundations of Mathematics

4 Q.H.

Topics include development, structure, and use of the number systems; peano postulates for integers; construction of negative numbers and rationals; development of real and complex numbers; introduction to model theory and the existence and use of alternative number structures; hyperintegers; calculus with infinitesimals.

MTH 1338 Foundations of Mathematics

4 Q.H.

Course material includes set theory; rules for set formation; the axiom of choice and its role in mathematics; transfinite cardinal and ordinal numbers and their arithmetic; axiomatizations of set theory.

MTH 1347 Applied Analysis

4 Q.H.

(Prereq. MTH 1246)

Selected topics are chosen to demonstrate the application of mathematics to interesting physical and biological problems. Methods chosen from ordinary and partial differential equations, calculus of variations, Laplace transforms, singular perturbations, special functions, dimensional analysis, and other techniques of applied mathematics.

MTH 1348 Applied Analysis

4 Q.H.

(Prereq. MTH 1347)

Continuation of MTH 1347

MTH 1349 Numerical Analysis

4 Q.H.

(Prereq. Two years of calculus and one course in programming)

This is a computer-oriented introductory course with emphasis on appreciation of the difference between the theoretical existence of a solution and its numerical calculation. Topics covered: systems of linear equations, nonlinear equations, interpolation, and approximation of functions. Students are required to program and analyze problems on a computer.

MTH 1350 Numerical Analysis

4 Q.H.

Continuation of MTH 1349. Topics include numerical differentiation and integration, solution of ordinary differential equations, and other topics as time permits.

MTH 1351 Functions of a Complex Variable I**4 Q.H.**

(Prereq. MTH 1243 or equiv.)

Topics include algebra and geometry of complex numbers; concepts of limit, continuity, and derivative in the complex domain; holomorphic functions, series, contour integration. Applications.

MTH 1352 Functions of a Complex Variable II**4 Q.H.**

(Prereq. MTH 1351)

Continuation of MTH 1351. Further topics may include conformal mapping, analytic continuation, Riemann surfaces, the Laplace transform and inverse transform, elliptic functions, applications.

MTH 1367 Geometry**4 Q.H.**

This course provides a careful look at classical Euclidean geometry, Hilbert's axioms for geometry, and models; geometries of Bolyai-Lobachevsky.

MTH 1370 Recent Ideas In Geometry**4 Q.H.**

(Prereq. MTH 1312 and MTH 1302, or permission of instructor)

Topics chosen by the instructor may vary each year. Topological classification of surfaces, theory of critical points and singularities of mappings, topological study of vector fields, knot theory, graph theory, differential geometry of surfaces, algebraic curves, homotopy.

MTH 1371 Recent Ideas in Geometry**4 Q.H.**

(Prereq. MTH 1370)

Continuation of MTH 1370.

MTH 1387 Probability I**4 Q.H.**

(Prereq. MTH 1223 or 1244)

Topics include probability functions for finite and infinite spaces; conditional probability and independence; discrete and continuous probability distributions for one or more random variables, expectation; moments; binomial, Poisson, and normal distributions; central limit theorem.

MTH 1388 Probability II**4 Q.H.**

(Prereq. MTH 1387)

Selected topics are studied, including introduction to stochastic processes, with emphasis on Poisson processes and Markov chains.

MTH 1390 Mathematical Statistics**4 Q.H.**

(Prereq. MTH 1387)

Topics include estimation of parameters, confidence intervals, hypothesis testing, regression, sampling distributions. Introduction to analysis of variance and statistical decision theory.

MTH 1392 Multivariate Statistics**4 Q.H.**

(Prereq. MTH 1390)

The course examines methods of classification, estimation, and prediction based on several statistical variables.

MTH 1407 Introduction to Analysis of Algorithms**4 Q.H.**

(Prereq. MTH 1245)

The course offers theoretical study of algorithm design, evaluation of algorithms, and other algorithmic concepts and techniques useful for computer programming. Topics include graph and matrix algorithms, testing primeness, factoring; evaluating greatest common divisors, linear Diophantine equations; evaluating square roots, logarithms, exponentials, etc.; truncation and round-off errors; random number generation; information organization and retrieval; sorting.

MTH 1409 Introduction to Discrete Structures**4 Q.H.**

Elementary concepts of combinatorial mathematics. Graph theory, enumeration algorithms, permutation groups, and coding theory. Application of these structures to various areas of computer science.

MTH 1411 Automata Theory and Formal Languages**4 Q.H.**

(Prereq. COM 1130 and COM 1201 or equiv.)

Topics include finite-state machines and regular expressions, context-free grammars. Parsing of context-free languages. Context-sensitive grammars, push-down stores, stack machines and linear-bounded automata. Turing machines, undecidability, description of computation using list structures, program machines, and programs.

MTH 1412 Artificial Intelligence**4 Q.H.**

(Prereq. COM 1201 or equiv.)

The course provides analysis of current computer programs dealing with problems such as theorem proving, chess playing, general problem solvers, robotics, symbolic computation, preceptrons, self-reproducing automata, and parallel machines.

MTH 1801-MTH 1809 Directed Study**4 Q.H.**

(Prereq. Permission of instructor)

Programs of directed study, held one or more quarters, are available for highly motivated students who wish to explore mathematical situations and theories in depth. Directed study can be used as an opportunity to examine familiar material in fresh ways or to explore new material that is not offered in formal courses. It is hoped that directed study programs will provide students strong in mathematics and the related sciences a chance to develop the art and skill needed to work independently and creatively in mathematics.

Note: Students strong in mathematics are permitted to enroll in graduate courses in mathematics.

MTH 1825, MTH 1826, MTH 1827, MTH 1828**Honors Program****(each) 4 Q.H.**

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 1.

Music

MUS 1100 Introduction to Music 4 Q.H.

This course offers an introduction to selected works of our Western musical heritage, from earliest to contemporary styles. It is primarily a survey and listening course, with emphasis on styles, basic theory, forms, and the historical, social, and artistic periods which these works represent. †

MUS 1101 Music as a Listening Experience 4 Q.H.

This introduction-to-music course is listening-oriented and has been designed to provide tools for the aural appreciation of music. No previous musical knowledge is required or assumed, and studies deal directly with compositions selected from the masterpieces of music. Organized according to the tenets of PSI (Personalized System of Instruction), the course allows the student to proceed at his or her own pace under the constant guidance and supervision of the instructor. Grades are determined by the number of units completed. †

MUS 1102 Music in Concert 4 Q.H.

In this course students have the opportunity to develop musical understanding through the study of music that is performed today in concerts by major symphony orchestras in the United States and throughout the world. Study materials are elected from actual symphony concert programs.

MUS 1103 Music as a Means of Social Expression 4 Q.H.

The course deals with the artist's involvement with recurring social themes of the human self-image, the search for peace and understanding, society's treatment of minority groups, and sex roles. Paintings and literary works are examined, in addition to works by composers such as Beethoven, Schönberg, Britten, and works by jazz composers.

MUS 1104 Introduction to African-American Music 4 Q.H.

Black music has evolved in fascinating ways over the past several hundred years. Topics include the impact of African rhythm on black music, the New Orleans coalescence, regional developments, ragtime, the emergence of big bands, the harmonic revolution of the 1940s, bebop, the 1960s avant-garde, and subsequent developments. Also examined are the contributions of black composers such as William Grant Still, Ulysses Kay, and George Walker.

MUS 1105 Music of the U.S.A. 4 Q.H.

This course examines American music from the time of Puritan psalm singing to the present. A wide variety of music will be covered, including concert music, traditional folk music, jazz, and contemporary styles.

MUS 1106 Women in Music 4 Q.H.

This course examines the multi-faceted role of women in music from the Renaissance through to the present. For centuries women have been active and influential patrons, composers, teachers, conductors, and performers in Europe and America. Their contributions to classical and popular music and to jazz will be examined with emphasis on such widely varying figures as Queen Elizabeth I, Elizabeth Jacquet de la Guerre, Fanny Mendelssohn Hensel, Clara Schumann, Mrs. H. H. A. Beach, Germaine Tailleferre, Billie Holiday, Carla Bley, Ruth Crawford Seeger, Pauline Oliveiros, Sarah Caldwell, Antonia Brico, and Nadia Boulanger.

MUS 1110 Music in Popular Culture

This course deals with the nature of music composed for the mass market. Techniques of recording and merchandising music are discussed, and selected songs are analyzed for their musical content. The evolution of various styles will be traced including ragtime, jazz, blues, and rock.

MUS 1111 Rock Music 4 Q.H.

This course focuses on the history of rock music from its origin in American blues and other styles through the popular music of the 1950s, the political styles of the 1960s, and the diverse trends of the 1970s. Major emphasis is placed on the formative years of rock.

MUS 1112 Jazz 4 Q.H.

The course focuses on jazz from its origins in New Orleans to the avant-garde experiments of today. The rhythmic, harmonic, instrumental, and stylistic characteristics of jazz are analyzed. Attention is given to the works of creative jazz artists such as Armstrong, Beiderbecke, Parker, Ellington, and Coltrane.

MUS 1113 The New Jazz 4 Q.H.

The course offers an in-depth study of various recorded works of important jazz performers/composers with respect to their works as creative artists: Armstrong, Beiderbecke, Ellington, Coltrane, Miles Davis, etc. The study is not chronological but deals rather with the dynamics of artistic growth and change. Special attention is given to the developments of the last decade.

MUS 1120 Survey of Music History 4 Q.H. (Prereq. MUS 1201)

This course provides a chronological view of Western music, while examining the role of music in society and exploring the contributions of influential composers. Representative works from each period are discussed, including music by composers such as Machaut, Josquin, Bach, Handel, Mozart, Haydn, Beethoven, Berlioz, Wagner, Mahler, and Stravinsky.

†Satisfies Core Curriculum Category II requirement.

MUS 1121 Medieval and Renaissance Music**4 Q.H.**

This course offers an introduction to European music from the sixth through the sixteenth centuries. A wide variety of music is covered, ranging from the serene elegance of sacred Gregorian chant and the plaintive love songs of the medieval troubadours to the lively dances and humanistic vocal music of the renaissance. Representative works by composers such as Machaut, Landini, Josquin, Palestrina, and Dowland will be examined.

MUS 1122 Music of the Baroque Era**4 Q.H.**

This course focuses on music of the seventeenth and early eighteenth centuries in Italy, Germany, France, and England. The emergence of important new genres (such as opera, sonata, and concerto) is discussed, and representative works of major composers (such as Bach, Handel, Corelli, Vivaldi, Rameau, and Purcell) are examined.

MUS 1123 Music of the Classical Era**4 Q.H.**

This course focuses on crucial developments in musical styles and forms of the late eighteenth century and on emerging genres, such as the symphony, the concerto, and the string quartet. Emphasis is placed on the vocal and instrumental works of Haydn and Mozart and on the early works of Beethoven.

MUS 1124 Music of the Romantic Era**4 Q.H.**

This course focuses on romantic realism and idealism as expressed in the music of the nineteenth century. Emphasis is placed on historical, nationalistic, and literary influences. Included are composers such as Beethoven, Schumann, Schubert, Berlioz, Liszt, Verdi, Wagner, Brahms, Tchaikovsky, and Mahler.

MUS 1125 Twentieth-Century Music**4 Q.H.**

This course focuses on developments in music from 1900 to the present. Topics include impressionism, expressionism, neo-classicism, and other major trends in music of the twentieth century.

MUS 1130 The Symphony**4 Q.H.**

This course offers a study of the symphony as a major genre in the classical, romantic, and contemporary periods. Included are works by composers such as Haydn, Mozart, Beethoven, Schumann, Tchaikovsky, Brahms, Sibelius, and Prokofiev.

MUS 1131 Piano Music: The Great Composers and Performers**4 Q.H.**

This course will give students the opportunity to hear and analyze some of the greatest works for piano, performed by some of the world's greatest performers. In addition to recordings by internationally acclaimed artists, live performances by guest artists from the Boston area will be presented in class.

MUS 1132 Introduction to Opera**4 Q.H.**

This course offers an analysis of opera as a dramatic genre. Aria, recitative, ensemble, and other basic elements of opera are isolated and discussed. Number opera, music drama, and Sing-spiel are some of the types of opera considered. Included are composers such as Mozart, Wagner, Verdi, and Puccini.

MUS 1133 Great Choral Literature**4 Q.H.**

This course provides an analysis of sacred and secular choral literature from medieval to contemporary times.

MUS 1134 Music and Poetry**4 Q.H.**

This course will examine the art of setting words to music. It will confront the aesthetic problems encountered in a synthesis of two different art forms. That synthesis will then be examined in selected songs, choral works, tone poems, and operas of diverse periods and styles (classical, folk, and popular).

MUS 1135 Traditional Folk Music of the United States**4 Q.H.**

This course focuses on the major folk music traditions of North America and their origins in Europe and Africa. Emphasis is also given to related ethnic dances, epics, and rituals.

MUS 1140 Mozart**4 Q.H.**

Mozart's musical development from child prodigy to mature artist is traced from personal letters and biographies. Many of his major compositions, including symphonies, concertos, operas, and chamber works are analyzed.

MUS 1142 Stravinsky**4 Q.H.**

This course focuses on the life and works of Igor Stravinsky, the man who has been perhaps the most influential of all twentieth-century composers. Important works (such as *The Rite of Spring*, *Symphony of Psalms*, *The Rake's Progress*, and *Agon*) will be selected from each of his major stylistic periods, and his contributions to twentieth-century musical style will be assessed.

MUS 1144 Debussy and the Music of Paris**4 Q.H.**

Claude Debussy, impressionist in sound, composed music that marked a turning point toward modern trends. This course covers much of his music for piano, orchestra, and voice, including *Suite Pour le Piano*, *Suite Bergamasque*, *Images* (for piano and orchestra), *Nocturnes*, *La Mer*, and *Pélleas et Mélisande*. The music of Satie, Ravel, and Fauré, as it relates to that of Debussy, will also be discussed.

MUS 1145 Beethoven**4 Q.H.**

This course analyzes the complex personality and art of Beethoven, his relation to the turbulent times in which he lived, and his role in classical and romantic music.

MUS 1161 Music Therapy 4 Q.H.

The course examines the application of music as a therapeutic vehicle to release suppressed emotions, to encourage self-expression in psychiatric patients, and to treat a wide variety of disorders. Music therapy, in a modern approach to health services, is currently being considered as a supplement to other treatments.

MUS 1162 Music Therapy II 4 Q.H.
(Prereq. MUS 1161)

This course examines the etiologies, characteristics, and applications of music therapy with the physically handicapped, hearing impaired, visually impaired, learning disabled, emotionally disturbed, speech/language impaired, and geriatric populations in one-to-one and group settings. In addition, improvisations and appropriate music materials for the nonmusician and adapted instrument designs tailored to each disability are studied, while the correlation of music and movement is explored. Comparison of various musical therapy approaches is included, and field trips to musical therapy sites in and around Boston will be taken.

MUS 1165 The Music Industry 4 Q.H.

This course will examine business-related areas of the music industry. Included will be topics such as the make-up and structure of the record industry and music publishing world, the function of performing rights organizations (ASCAP and BMI), and the role of concert and orchestral managers. Guests from the various fields will be invited to lecture in class, and trips to "behind the scenes" locations will be arranged.

MUS 1181 Music of Africa 4 Q.H.

The music of Africa is as varied as that continent's many linguistic and tribal identities. This course will provide a broad survey of the musical traditions of Africa with respect to their historical, social, and cultural backgrounds. Musical organization, musical practice, and aspects of style will all be discussed in light of possible contributions to contemporary African-American music.

MUS 1182 Music of the Middle East 4 Q.H.

This course is an introduction to the music of selected Near Eastern and Arab cultures (such as Persian in the East and Ethiopic and Berber in Africa). The cantillation styles and practices of various chants of the Hebrew, Christian, and Islamic traditions are also included.

MUS 1200 Learning to Read and Write Music 4 Q.H.

This is a basic course for those who want to learn how to read music or how to write a tune. Students have the opportunity to learn to sight-read music and to compose in some of the basic forms (song, theme and variation, etc.).

MUS 1201 Fundamentals — Music Theory I 4 Q.H.

This course, the first in the theory sequence, offers the student the opportunity to learn simple melodic and rhythmic dictation skills; to recognize and build scales, intervals, and triads; and to sing at sight simple tonal melodies.[†]

MUS 1202 Theory II 4 Q.H.
(Prereq. MUS 1201)

This course focuses on basic theoretical skills such as ear-training, sight-singing, and dictation. Also included are beginning studies in harmony and the analysis of music.

MUS 1203 Theory III 4 Q.H.
(Prereq. MUS 1202)

This course concentrates on intermediate levels of ear-training, sight-singing, and dictation. Additional work in harmony and analysis is undertaken.

MUS 1204 Theory IV 4 Q.H.
(Prereq. MUS 1203)

This course includes principles of harmonization and modulation, realization of figured-bass, advanced ear-training and two-part counterpoint. The student will also have the opportunity to undertake original composition.

MUS 1230 Chorus 1 Q.H.
(Prereq. Permission of the instructor)

Students participate as performers in one or more ensembles under the direction of a faculty conductor. May be repeated for credit.

MUS 1231 Band 1 Q.H.
(Prereq. Permission of the instructor)

Students participate as performers in one or more ensembles under the direction of a faculty conductor. May be repeated for credit.

MUS 1232 Orchestra 1 Q.H.
(Prereq. Permission of the instructor)

Students participate as performers in one or more ensembles under the direction of a faculty conductor. May be repeated for credit.

MUS 1233 Early Music Players 1 Q.H.
(Prereq. Permission of the instructor)

Students participate as performers in one or more ensembles under the direction of a faculty coach. May be repeated for credit.

MUS 1240 Historical Instruments Workshop 4 Q.H.

This course is for those who wish to learn to play a medieval, Renaissance, or baroque instrument. In addition to teaching basic skills on instruments such as recorder, flute, crumhorn, viola da gamba, vielle, cornetto, and harpsichord, the course will provide opportunities for developing proficiency in music reading and ensemble playing.

[†]Satisfies Core Curriculum Category II requirement.

MUS 1241 Piano Class I**4 Q.H.**

This is an introductory course in piano designed for adults who may have had no previous study in music. The course combines learning to read music with improvisation and accompaniment of simple tunes. Some theory is introduced to clarify the structure of pieces studied in class.

MUS 1242 Piano Class II**4 Q.H.**

(Prereq. MUS 1241)

This course is a continuation of the skills developed in Piano I, with emphasis on increasing students' flexibility at the keyboard through the study of scales, transposition, and modulation.

MUS 1243 Piano Class III**4 Q.H.**

(Prereq. MUS 1242)

This course will give students the opportunity to develop further facility acquired in Piano I and II through the study of more advanced works in the piano repertoire.

MUS 1244 Voice Class I**4 Q.H.**

(Prereq. Permission of instructor)

Students will have the opportunity to learn the basic vocal production required for fine singing. Repertoire, both classical and contemporary, will be chosen for each student to learn and perform in lessons and before the entire class. Lectures will be given on the following subjects: diction, the physiology of singing, resonance, registers, and interpretation. Students will also study the basics of music reading and sight-singing. Some interpretation will be discussed, and recordings of the greatest vocal artists will be played for class analysis.

MUS 1301 Analysis of Musical Masterworks**4 Q.H.**

(Prereq. MUS 1204)

This course offers an analysis of a small number of musical masterpieces covering a diverse range of styles within the "Western" tradition. Aspects of phrasing, harmony, harmonic rhythm, orchestration and rhythm are analyzed.

MUS 1302 Masterworks of Musical Literature II**4 Q.H.**

(Prereq. MUS 1301)

This course represents analytic techniques which can be applied to selected musical literature of the nineteenth and twentieth centuries. A small number of masterworks will be examined in detail, with attention given to the evolution of harmonic idioms and formal principles.

MUS 1461 Applied Music Lessons**3 Q.H.**

(Prereq. Permission of instructor and department chairman)

Advanced individual instruction in voice or on modern and early instruments. May be repeated for credit. This course is available only to upper-class students concentrating in Music Literature and Performance.

MUS 1800, MUS 1801, MUS 1802, MUS 1803, MUS 1804, MUS 1805 Directed Study**(each) 4 Q.H.**

The focus of this course is independent work in a selected area of music under the direction of one member of the department. Enrollment is limited to qualified students by special arrangement with the supervising faculty member and with the approval of the department chairman.

MUS 1810, MUS 1811, MUS 1812 Junior-Senior Honors Program**(each) 4 Q.H.**

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 1.

INT 1100 Introduction to Art, Drama, and Music**4 Q.H.**

This interdisciplinary course offers an integrated approach to three related disciplines: art, drama, and music. Basic vocabulary and analytical techniques are established for each discipline, emphasizing such common elements as color, line, rhythm, texture, and form. Representative works from various periods are examined in the context of the cultures that produced them, and lectures focus on parallels and contrasts among the three disciplines' manifestations of specific trends, principles, and ideals. Lectures, readings, and listening assignments are supplemented by visits to art galleries and attendance of concerts and theatrical performances.[†]

INT 1110 American Musical Theatre**4 Q.H.**

This interdisciplinary course, offered by the department of Drama and Music, traces the development of the American musical from works such as *The Black Crook* to the present. The role of musical theatre as both entertainment and serious art form is considered through an examination of script, score, dance, and design. Works by composers and lyricists such as Bernstein, Rodgers and Hammerstein, the Gershwins, Weill, Lerner and Loewe, and Cole Porter are studied.

[†]Satisfies Core Curriculum Category II requirement.

Philosophy and Religion

PHL 1100 Introduction to Philosophy 4 Q.H.

The course seeks to introduce students to philosophy by acquainting them with the theories and arguments of classical and contemporary philosophers and by teaching the skills of constructing and analyzing arguments. Students both learn about and engage in philosophical inquiry. While not all sections treat the same issues, typical areas covered include questions about the basis of morality, free will versus determinism, the existence of God, the problem of suffering, and the nature of knowledge.[†]

PHL 1110 Introduction to Religion (Formerly PHL 1160) 4 Q.H.

This course seeks to identify and appraise different ways of being religious: primitive, mystical, dogmatic, and ritual. Emphasis is placed upon appreciating the unique standpoint that each requires, how each sees the world in a radically different way, and how that leads to distinctive ways of life.[†]

PHL 1115 Understanding Religious Man 4 Q.H.

This course examines several important explanations of the nature, origin, and present significance of religious experience, beliefs, and practices in the light of modern knowledge and attitudes.

PHL 1130 Ethics: East and West 4 Q.H.

Is there a best way to live? Is there a way a human being should live? In both Eastern and Western philosophy there are claims that a way of life exists that leads to happiness, power, and wisdom. This course explores this claim by studying the thought of such philosophers as Socrates, Buddha, Plato, Aristotle, Lao Tzu, Epictetus, Marcus Aurelius, Aquinas, and Spinoza, as well as by studying some of the classical Hindu and Buddhist texts.

PHL 1135 Philosophical Problems of Law and Justice 4 Q.H.

This course focuses on two general questions: What is the proper scope of the law? and How should the law be enforced? Under the first question, a number of issues are dealt with: whether the law has a legitimate right to restrict such activities as the use of drugs, deviant sexual practices, or gambling. Topics included in the second question are the justification of punishment, rehabilitation as an alternative to punishment, and the death penalty.

[†]Satisfies Core Curriculum Category II requirement.

PHL 1140 Social and Political Philosophy

4 Q.H.

(Prereq. 4 Q.H. philosophy)

A consideration of basic questions about the nature of the state and the relationship of individuals to the state. What basis is there for individuals to obey the laws of the state? What conditions must a government meet to be legitimate? What justification can be given for democratic forms of government? What sorts of controls should the state exert over citizens? What benefits do citizens have a right to expect from the state? Readings will include both classical and contemporary sources.

PHL 1145 Technology and Human Values

4 Q.H.

The course examines the changing values of the modern, technologically advanced world. Our study attempts to increase our understanding of the supposed breach between the literary and scientific cultures, the diverse approaches toward their reconciliation, and the human dimensions of science and technology. Other relevant topics are the neutrality of technology with respect to good or evil uses, technology as an instrument for human liberation, and the issue of proper and effective modes of controlling technology in today's world. Pirsig's widely read paperback, *Zen and the Art of Motorcycle Maintenance*, is studied, as is Lynn White's *Dynamo and Virgin Reconsidered*. Other important writers to be considered include Kurt Baler, Jacob Bronowski, Barry Commoner, Erich Fromm, Karl Marx, and C. P. Snow.

PHL 1150 Technology and the Individual

4 Q.H.

This introductory course attempts to awaken some philosophical reflectiveness regarding the potential benefits and threats to individuals that derive from technological change. The course explores and discusses such issues as the relation of technology to human freedom and privacy, the effects of "future shock" upon the individual, the possibility of the tyranny of a technological elite, and the prospects for the transformation of humankind. Some writers see technology as the salvation of humanity; others see technology leading to dehumanization, a decrease of freedom, and a developing sense of alienation; still others see the extinction of "human nature" as we once knew it. Where is the truth in all of this? What are the social, psychological, and philosophical meanings and consequences of technological change in our day and in the future? Some of the major readings for the course are from Alvin Toffler's *Future Shock*, Herbert Marcuse's *One Dimensional Man*, Jacques Ellul's important criticism *The Technological Society*, and Lewis Mumford's *The Transformation of Man*.

PHL 1155 The Ethics of Human and Animal Experimentation 4 Q.H.

This course explores the conflicts that arise between the value of free scientific inquiry on the one hand, and the rights, vulnerabilities, and suffering of human and animal subjects on the other. Topics include traditional issues involving informed consent, voluntariness, coercion, experimental design, risk-benefit analyses, institutional review boards, and professional guidelines, as well as such less traditional issues as the competing conceptions of progress, whether we have obligations to nonhuman animals, and what, if anything, justifies us in treating nonhuman animals in ways in which we know we should not treat human animals.

PHL 1160 Ethical Issues of Taxation 4 Q.H.

Although we tend to believe that persons have a right to their own labor, a right to their own property, and a right to exchange their labor or property for the labor or property of other consenting adults, it seems that income taxes, property taxes, and sales taxes violate these rights. This course explores two basic questions: Is any taxation morally justified? Are there moral grounds for choosing among taxation policies? Specific topics include competing conceptions of private property; the "progressive versus regressive taxation" controversy; the "flat tax" controversy; the alleged problems with interpersonal utility comparisons; and questions involving the distribution of tax monies, e.g., whether those who have more than they need have any moral obligation to provide for the needs of the poor.

PHL 1165 Moral Problems in Medicine 4 Q.H.

This course examines two fundamental ethical systems, one of which is grounded on the dignity of the person, the other on the intrinsic value of happiness. The course then explores the difficult issues of euthanasia, suicide, paternalism, medical experimentation, the patient's right to consent to any therapeutic intervention, and the concept of death with dignity. After studying these and related moral issues, the larger economic and policy issues of justice, some of which are current in political debates, are examined (for example: Is there a right to health care?). It is hoped that this course will encourage the student to become more sensitive to moral problems as they arise in medical settings, better able to deal with these troublesome issues, and perhaps to be more courageous in facing them if that becomes necessary. The course also offers an investigation into the questions of abortion, euthanasia, infanticide, genetic counseling, psychosurgery, and human experimentation from the standpoint of both philosophical ethics (such as the theory of the end justifying the means) and religious ethics (such as the natural law theory of the Roman Catholic Church).

PHL 1200 Introduction to Logic-1 4 Q.H.

A practical introduction to the logic of propositions and the syllogism. Principles of critical reasoning and fallacies. Practice in applying logical techniques to the creation and criticism of argument. †

PHL 1203 Introduction to Logic-2 4 Q. H.

Further study of the techniques of logic in the analysis and creation of argument. The logic of predicates, quantifiers, and relations. Practice in applying these techniques to natural arguments. Consideration of the forms of definition and the evaluation of empirical generalizations. †

PHL 1215 Symbolic Logic 4 Q.H.

The course offers a presentation of the syntax and semantics of propositional logic and first-order quantification theory. Relations between these systems and natural language are considered. The course covers analysis of the notion of derivation within a system and the notion of logical consequence, and practice in analyzing logical structure in natural language sentences. †

PHL 1225 Ancient Philosophy 4 Q.H.

An exploration of classical Greek philosophy, the course starts with a study/discussion of the roots of Western thought in the sixth century B.C. and argues the reasons for our debt to these original thinkers who were concerned with explaining the principles of external nature and the problems of human knowledge and conduct. Central to understanding these problems is the study of Socrates and his adversaries, the Sophists, and the two major figures he influenced: Plato and Aristotle. The course also covers Roman philosophy, the Stoics, and the Sceptics, who are a prelude to the early Christian philosophers of the first century A.D. Throughout the course, attention is placed upon the interplay between the philosopher and the moral, social, and religious context in which his thought arises. Student participation in class discussion is very important to the course.

PHL 1230 Modern Philosophy 4 Q.H.

(Prereq. 8 Q.H. philosophy)

The 100 years between 1650 and 1750, sometimes called "the century of genius," were a period in which philosophers reacted to the new scientific discoveries of Copernicus, Kepler, and Galileo. Out of this reaction came new ways of thinking about the nature of knowledge and the nature of the world itself. The course focuses on the development of the rationalist and empirical philosophies during this period, with emphasis on Descartes, Leibniz, Spinoza, Locke, Berkeley, and Hume.

†Satisfies Core Curriculum Category II requirement.

PHL 1243 Existentialism**4 Q.H.**

(Prereq. 4 Q.H. philosophy)

Existentialist philosophy is examined in its greatest representatives, such as Kierkegaard, Nietzsche, Dostoevski, Heidegger, Jaspers, and Camus, with major attention given to Jean-Paul Sartre and Maurice Merleau-Ponty. The focus of this course will be on central themes, including self-alienation, unauthenticity, authenticity, and existential experiences. Existential philosophy is examined in its historical, social, and cultural relations, and in its influence on psychology, psychoanalysis, sociology, political science, and literature, both in Europe and in the United States.

PHL 1245 Analytic Philosophy**4 Q.H.**

(Prereq. 8 Q.H. philosophy)

The development of the analytic movement from its beginnings in the early works of Moore and Russell. Some treatment of Russell's logical atomism, the logical positivists, the thought of Ludwig Wittgenstein, and their widespread influence.

PHL 1250 Chinese Philosophy**4 Q.H.**

This course offers a study of Chinese philosophy in the ancient period (until 221 B.C.). Emphasis is placed on Confucianism, Taoism, and the *I Ching*. Less emphasis will be placed on the Logicians, the Mohists, and the Legalists.

PHL 1255 Indian Philosophy**4 Q.H.**

In this course we examine the two classical Indian philosophical systems of Hinduism and Buddhism. In examining Theravada Buddhism, we explore the view that it is possible for us to live without anxiety or suffering if we overcome our ignorance of reality and master our desires. Next, we turn to Mahayana Buddhism, focusing on its ethics of compassion and its related metaphysics of "voidness." In this part of the course, we examine questions which, in the West, are thought of as questions about personal identity and the nature of the self. In exploring Hinduism, we study Vedic mysticism as it comes to us through the Upanishads, as well as the influential ethics of the Bhagavad Gita. Among the philosophical issues that arise in our examination of Hinduism is the question of whether the method of yoga and meditation is a reasonable method for learning about the fundamental nature of reality.

While studying the classical texts of these systems, we will critically explore the techniques employed within these traditions: the method of yoga, the function of the guru, various methods of meditation, the point of non-violence, the function of philosophical analysis, and the role of the austerities. In so doing, we study Hinduism as it is currently practiced in India; Theravada Buddhism as it is currently practiced in Sri Lanka and Thailand; the Tibetan tradition of Mahayana Buddhism; and the nonviolence of Ghandi.

To study Indian philosophy is to study a tradition of philosophy in which ethics is not fragmented from epistemology, knowledge is more than justified true belief, and one's metaphysics is to be realized. In our study, besides the classical texts, we will employ films and guest speakers.

PHL 1265 American Faiths**4 Q.H.**

This course will approach the American religious tradition from three perspectives. First, we shall examine the transplanted and transformed European traditions in the context of American diversity and pluralism. The Protestant, Roman Catholic, and Jewish traditions will be the most significant examples. Second, we shall look into the rise and establishment of largely indigenous religious groups who have forged their own foundations in the midst of the older traditions. Among others, the Mormons, the Hutterites, the Mennonites, the perfectionist groups (such as the older Oneida Community and the Shakers, and the more recent "cults"), and the black and Native American groups are especially significant because of their attempts to survive apart from the general culture. Third, we shall explore the theory of an American civil religion—the notion that there is a general religious meaning for American culture that makes the coexistence of the many religious groups possible and gives to that culture and its history a religious significance. The purpose of the course will be to achieve an understanding of what is unique and viable in the American religious tradition.

PHL 1270 Western Religions**4 Q.H.**

Western religion is grounded in the experience of God's presence, which transcends and transfigures the life of the individual and the community. This encounter is the essence of Judaism, Christianity, and Islam. Drawing on autobiography and biography, this course delves into the personal religious quests of such major religious thinkers as St. Augustine, St. Theresa, Martin Luther, Elie Wiesel, Richard Rubenstein, Dietrich Bonhoeffer, and Mohammed.

PHL 1275 Eastern Religions**4 Q.H.**

Eastern religions appear to be fundamentally different from the orthodox religions of the West. Not only do Hinduism, Buddhism, and Taoism promise a solution to the problem of suffering (compare the common Christian and Jewish attitudes), but most of these religions do not have a central God personality, and some explicitly reject such a concept as meaningless, or at least as irrelevant to leading a religious life. Central to these views is a way of being in the world which emphasizes meditation, skillful and compassionate action, and a direct awareness of the fundamental nature of reality. The course first tries to make sense of the difficult notion that the way we

perceive reality may be illusory. It then examines Theravada Buddhism, a religion that rests on the insights that everything is impermanent and that it is possible to live fully in the present without any suffering. From Theravada Buddhism, the course turns to Mahayana Buddhism, and then to Taoism, a subtle view that emphasizes the "flow" of life and that "the way to do is to be." Next, the Hinduism of the Upanishads is examined. As part of the exploration of this form of Hinduism, students are given the opportunity to examine intellectually and also to practice a few methods of meditation. In addition, the course investigates the devotional aspect of Hinduism as expressed in the Bhagavad Gita. There will also be an exploration of Zen.

PHL 1280 Islam 4 Q.H.

The course explores the history of Islam, its conflicts with the West in past and present, Islamic beliefs, the future of Islam as a world religion, and relations of Islam with Christianity and Judaism. Since Islamic faith touches upon social, political, and legal issues, the course is concerned with them as well as with the more familiar religious and theological questions.

PHL 1290 Cults and Sects 4 Q.H.

This course offers an examination of the varieties of religious experience from the perspectives of sociology and psychology of religion. This course focuses on such cultic and sectarian groups as Christian Science, the American Shakers, the Unification Church, the Hare Krishna movement, and the Black Muslims. The primary purpose of this course is to provide the student the opportunity to acquire critical investigative tools with which to analyze different religious expressions.

PHL 1293 Mysticism: East and West 4 Q.H.
(Prereq. PHL 1115 or permission of instructor)

The course offers an inquiry into mystical experience through a comparative study of the writings of Christian, Buddhist, and Hindu mystics and of secondary interpretive sources. Areas taken up are the potential oneness of man and God, the conflict of mystics with traditional forms of religion, and the possibility of a common, cross-cultural basis for mysticism.

PHL 1295 Medicine, Religion, and the Healers' Art 4 Q.H.

This course explores aspects of the historical, religious, and cultural context for contemporary alternatives in health care, beginning with an examination of several examples of traditional healing practices and their accompanying religious and philosophical views about human life. Course material explores this "holistic" tradition in two frames of reference: the ascendancy of scientific rationalism over religion, and the takeover, by male-dominated professions, of healing functions that society has traditionally assigned to women (e.g., the rise of obstetrics and the suppression of midwifery). Special attention is given to major

women healers of the nineteenth century. Course includes a look at some contemporary efforts at reintegration of scientific and traditional values in the modern health care system. Students will also meet and interact with patients and healers active in the modern holistic health movement.

PHL 1300 Religion in a Social Context 4 Q.H.

This course offers an exploration of the social forms of religion. The structures and roles of the church, synagogue, and sect are described and critically evaluated. In addition, emphasis is given to their functions, with reference to general social structure, process, and reform.

PHL 1305 Religion in the Age of Science 4 Q.H.

This course examines the problems posed by the interaction between religion and the natural and social sciences. Representative selections from Hume, Darwin, Marx, Freud, Erickson, and Troeltsch are used to interact with selections from Bultmann, Teilhard de Chardin, Niebuhr, Bonhoeffer, and Tillich.

PHL 1310 The Occult as Religion 4 Q.H.

The course focuses on the history, aims, and methods of such esoteric or mystic doctrines as astrology, numerology, magic, demonism, and divination, and investigates the structural similarities of these religious forms to those of the dominant religious traditions of the world.

PHL 1315 Understanding the Bible 4 Q.H.

This course introduces students to the Old and New Testaments, so that they may enter into a dialogue with the Bible, understanding not only what it says, but why it is said that way. To do this, discussion focuses on the Bible's social, political, and cultural backgrounds.

PHL 1320 The Meaning of Death 4 Q.H.

This course offers an inquiry into different philosophical and religious perspectives on death and life after death, including an examination of some powerful contemporary accounts of personal confrontation with death, along with investigations into attitudes toward death in other traditions (e.g., Hinduism and Buddhism). In addition, the course explores responses to the Holocaust in Europe, and theories about life after death (such as those discussed in Raymond Moody's *Life After Life* and Ian Stevenson's *Reincarnation*).

PHL 1325 Philosophy of Death, Grief, and Dying 4 Q.H.

This course explores fears about death and dying and the grieving process, and examines the processes people sometimes experience while dying. In addition, the course examines current practices of caring for the dying and of coping with bereavement, questioning whether these practices are, in fact, healthy, helpful, and/or ethical. Other relevant ethical issues to be examined include euthanasia, truth-telling with the dying, suicide, and

paternalism. The course will close with the question of the meaning of life, given the fact that we must die.

PHL 1335 Moral Philosophy 4 Q.H.
(Prereq. 4 Q.H. philosophy or religion or permission of instructor)

What sorts of things are good and bad? What actions are right and wrong? These two basic questions are explored. The course covers major classical conceptions of ancient Greece and Rome, their replacement by the Western religious ethic, its modification and rejection in the early modern period, and the emergence of modern versions of traditional conceptions of the good life, with reflections on the nature of ethical inquiry itself as a legitimate study.

PHL 1340 Aesthetics 4 Q.H.
(Prereq. 4 Q.H. philosophy)

This course offers a historical approach to aesthetics. Aesthetics is the philosophical analysis of concepts and the solution of problems that arise when one contemplates beautiful (or ugly) objects; it is also concerned with standards of value in judging art. Aesthetics asks the following questions: What features make objects beautiful (or ugly)? Are there aesthetic standards? What is the relation of works of art to nature? What is the nature of an aesthetic experience?

PHL 1345 Philosophy of Religion 4 Q.H.
(Prereq. 4 Q.H. philosophy)

The basic question in this course is "Does God exist?" The course examines several major arguments affirming and criticizing the notion of God's existence. A central problem in recent philosophy of religion is whether or not it makes any sense to speak of the truth (or falsity) of religious belief, as well as the implication an answer to that issue has for religious life; this topic will be examined in the latter half of the course.

PHL 1350 Philosophy of Human Nature 4 Q.H.

The course offers a philosophical inquiry into the theories of man, man's dimensions, and human nature. The question of the existence of human nature is thoroughly examined. Special interest will be given to contemporary theories of man and self-alienation, and their influence in social sciences. Selected readings from Descartes, Hobbes, Hegel, Marx, Kierkegaard, Maritain, Freud, Skinner, Fromm, and Frankl.

PHL 1355 Existentialism and Literature 4 Q.H.

After World Wars I and II, existentialist philosophy inspired the literature of "extreme situations." This course examines human extreme experiences in existentialist philosophy and novels. Some of the major themes are loneliness; self-alienation; social pressures; conformity; absurdity; anxiety; social, political, and moral crises; nothingness; and death. Selected readings will include the most influential European and American authors.

PHL 1360 Philosophy and Literature 4 Q.H.

The purpose of this course is to provide the student the opportunity to learn to recognize, appreciate, and criticize philosophical themes in literature. The readings typically include acknowledged classics by philosophical authors such as Voltaire, Dostoevski, and Sartre, as well as such popular contemporary authors as Vonnegut, Barth, and Pynchon. There are also some readings from more straightforward philosophical sources. Philosophical topics include the meaning of life, the human condition, depersonalization, alienation, human freedom, questions of value, responsibility, rationality, and personal identity. Religious, nihilistic, existential, and other points of view are explored.

PHL 1370 The Meaning of Life 4 Q.H.

The course offers an examination of selected philosophical problems of human existence in the contemporary world, with major emphasis on the search for identity and self-fulfillment. Selected problems are discussed, such as freedom, death, sexuality, alienation, becoming a person, and peak experiences. The course includes readings from Kierkegaard, Heidegger, Sartre, Camus, Maslow, Allport, Frankl, Rogers, and Rollo May.

PHL 1375 Freud, Skinner, and Their Critics

4 Q.H.

(Prereq. 4 Q.H. philosophy or permission of instructor)

The course provides an examination of fundamental themes and concepts of Freud's psychoanalysis and Skinner's psychology from a philosophical perspective and criticisms of them from the point of view of reformed Freudians and existentialists. Selections include Freud, Jung, Adler, Karen Horney, Skinner, Koestler, Pearls, Sartre, Merleau-Ponty, and Kovaly.

PHL 1400 Theory of Knowledge 4 Q.H.

(Prereq. 4 Q.H. philosophy or permission of instructor)

This is an introduction to epistemology, or theory of knowledge, which asks the following questions: What is knowledge? Is knowledge (or even certainty) attainable? What are the limitations of human knowledge? How is knowledge—if we have it—acquired? What roles do reason and experience play in the attempt to attain knowledge? This course uses both classical (René Descartes and David Hume) and contemporary sources (Bertrand Russell and others). Various theories of knowledge, such as empiricism, rationalism, and scepticism, are examined and criticized. The student is encouraged to form at least tentative opinions on these issues.

PHL 1405 Metaphysics

4 Q.H.

(Prereq. 8 Q.H. philosophy)

The course offers a consideration of central problems and theories concerning the nature of reality, with special attention to such areas as the relation

between mind and matter, free will and determinism, and criteria of existence.

PHL 1410 Philosophy of Science 4 Q.H.
(Prereq. 4 Q.H. philosophy)

Science is the dominant intellectual force of our culture. This course focuses on the nature of scientific method, scientific theories, and scientific explanations. A central question is: Why is science thought to provide the most reliable account of the nature of reality? Various theories about the nature and reliability of science are considered.

PHL 1415 Advanced Logic 4 Q.H.
(Prereq. PHL 1215)

The course offers a study of the major results in the meta-theory of first-order logic. Consistency, completeness, and decidability. Discussion of the general notion of an effectively computable process, Church's thesis, and the existence of unsolvable problems.

PHL 1430 Philosophy of Psychology 4 Q.H.
(Prereq. 4 Q.H. philosophy or 4 Q.H. psychology or permission of instructor)

The course offers an examination of the philosophical and scientific foundations of behavioristic psychology, with emphasis on the acquisition and use of language. Discussion of alternative conceptions, e.g., Chomsky's and those arising from computer studies.

PHL 1435 Philosophy of Mind 4 Q.H.
(Prereq. 4 Q.H. philosophy)

What is the relation between mind and body? Is the mental merely a function of bodily process and behavior or does it somehow exist "over and above" the material? How are self-knowledge and knowledge of other minds achieved? What is the relation between words and thoughts? This course in part, seeks to show what puzzles and problems result from an honest attempt to answer these questions in a reasonable way. Classical sources, such as Descartes and Locke, and contemporary sources, such as Wittgenstein and Putnam, are examined. But the course also seeks to arrive at some answers—however tentative or provisional—to these questions. The student is constantly challenged to think and write well about these difficult subjects.

PHL 1440 Philosophy of Language 4 Q.H.
(Prereq. Permission of instructor)

The course examines prospects for a theory of language, its syntax and semantics. Contrasts between theory of reference and theory of meaning. Are there universals of language? Relations between linguistics and psychology. Readings from Frege, Quine, Russell, Chomsky, and Fodor.

PHL 1550, PHL 1551, PHL 1552 Honors I, II, and III (each) 4 Q.H.

Students interested in taking Junior-Senior Honors courses should confer with department chairperson. Arrangements are made between the student and a member of the faculty. Staffing by arrangement.

PHL 1565 Seminar in Wittgenstein 4 Q.H.
(Prereq. 8 Q.H. philosophy or permission of instructor)

Ludwig Wittgenstein is one of the most influential, if not the most influential, philosophers of the twentieth century. A mysterious yet charismatic figure, he possessed both analytic genius and the creativity of a visionary. With unparalleled intensity, he addressed himself to philosophical problems. What is the relationship between language and the world? Are there thoughts "too deep" for words? What, if anything, can be said about the mystical, the beautiful, and the religious? What is consciousness and what is its role in action? What are the big, simple, mistaken ideas that cripple the philosophical enterprise? How should philosophers proceed? What is meaningful? Wittgenstein's thought is so unique that it cannot be said that any other course, or courses, in Philosophy will prepare the student for it. On the other hand, intelligent students with little formal preparation can profit from a study of Wittgenstein, given the proper dedication to truth.

PHL 1800 Directed Studies 4 Q.H.
(Prereq. By arrangement between student and faculty)

Those interested in the Directed Studies program should meet with department chairperson. Staffing: by arrangement.

PHL 3265 Issues in Medical Ethics 4 Q.H.
(Prereq. permission of instructor)

This course focuses on issues in medical ethics, especially as they are likely to arise in a clinical setting. Course begins with exploration of the two basic systems of ethical theory and then concentrates on their application in cases exemplifying the issues of euthanasia, paternalism, experimentation, informed consent, quality of life, professional responsibility, right to health care, truth telling, genetic control, abortion, and the allocation of scarce medical resources.

INT 1400 Professional Practices: Individual and Social Dimensions 4 Q.H.

The course explores the dimensions and dilemmas of freedom and responsibility confronting professional people practicing within the limits set by socioeconomic conditions, clients, and other professionals. Case histories are examined to illustrate the dilemmas professionals face, the choices that are typically made, and the consequences these have on the freedom of the practitioner and on personal and professional integrity.

Physics

Courses are listed according to level and degree of specialization and are not in numerical order. General interest courses have no prerequisites and may be used to satisfy College of Arts and Sciences distribution requirements in science. Introductory physics courses are basic first-year physics lecture courses; the corresponding laboratories are listed under introductory physics laboratories. Advanced physics and astronomy courses require one year of introductory physics and may be used to satisfy degree requirements for physics majors.

General Interest Courses

PHY 1101 Physics in Music 4 Q.H.

This course discusses the physical principles involved in producing, recording, and reproducing music. Topics include explanations of the operation of various instruments in terms of the basic properties of resonances and waves; physical and psychological response of the ear; the physical basis of the modern (well-tempered) system of tuning; the operation of microphones, amplifiers, loudspeakers, tape recorders, radios, and other devices.

PHY 1111 Introduction to Astronomy I 4 Q.H.

The first quarter of a two-quarter sequence, this course offers the nonscience student an introduction to modern astronomical ideas. Topics include introduction to the cosmos; tools of the astronomer (atoms, the nature of light and radiation, telescopes, space astronomy); the earth in space; our solar system (origin and future of the solar system, the planets and other bodies, the latest from spacecraft flights, the sun as our bridge to the stars); the question of life in the universe.[†]

PHY 1112 Introduction to Astronomy II 4 Q.H. (Prereq. PHY 1111)

Topics include properties of stars: life and death of stars (Hertzsprung-Russell diagram, birth of stars, main sequence, red giants, white dwarfs, supernovae, neutron stars, black holes); our Milky Way galaxy; galaxies; quasars, cosmology (the expanding universe, the big bang, the future of the universe).

PHY 1121 Introduction to Science I 4 Q.H.

PHY 1121 and PHY 1122 form a two-quarter sequence for nonscience majors that provides an interdisciplinary treatment of the basic ideas of the natural sciences. Concepts such as energy, gravity, and the atom are discussed, followed by a consideration of the ways in which atoms combine to form the substances that comprise matter.

PHY 1122 Introduction to Science II 4 Q.H. (Prereq. PHY 1121)

This course applies principles previously learned in PHY 1121 to selected topics in biology, chemistry, physics, and geology. The subjects actually covered depend on the interests of the instructor, and, to some extent, on those of the students.

Introductory Physics Courses

PHY 1191 Physics I 4 Q.H.

(Prereq. MTH 1191, may be taken concurrently; B.E.T. majors only)

Topics include kinematics and dynamics of particle motion, Newton's laws, projectile and circular motion, conservation laws for momentum and energy, rotational motion; simple harmonic motion.

PHY 1192 Physics II 4 Q.H.

(Prereq. PHY 1191; MTH 1192 may be taken concurrently; B.E.T. majors only)

Topics include wave motion, intensity, interference phenomena, Doppler effect, vibrating systems, temperature, heat, change of state, heat transfer, kinetic theory of gases, general gas laws, thermodynamics.

PHY 1193 Physics III 4 Q.H.

(Prereq. PHY 1192; B.E.T. majors only)

Topics include electrostatics, magnetism, magnetic induction, induced currents, direct- and alternating-current circuits, properties of light, reflection, refraction, dispersion, optical systems, diffraction, polarization.

PHY 1201 Physics for the Life Sciences I

4 Q.H.

Topics include vector addition of force, principles of statics; Newton's second law, kinetic and potential energy; pressure static properties of fluids, fluid flow. To take the laboratory for this course, register for PHY 1501 concurrently.

PHY 1202 Physics for the Life Sciences II

4 Q.H.

(Prereq. PHY 1201)

Topics include wave motion, sound, light, optics, static electricity, d.c. circuits, magnetism. To take the laboratory for this course, register for PHY 1502 concurrently.

PHY 1203 Physics for the Life Sciences III

4 Q.H.

(Prereq. PHY 1201)

Topics include temperature, gas laws, properties of liquids (surface tension and osmotic pressure), properties of solids, thermal physics, Coulomb's law, atomic and nuclear physics.

[†]Satisfies Core Curriculum Category II requirement.

PHY 1209 Basic Physics I**4 Q.H.**

Topics include the physical properties of gases and condensed matter, force and pressure, hydrostatics, ideal and real gases, condensation and evaporation, surface tension, osmosis and fluid flow. Laboratory is an integral part of the course.

PHY 1221 Physics for Engineering Students I**4 Q.H.**

(Prereq. MTH 1123 or equiv., may be taken concurrently)

The first quarter of a four-quarter sequence intended primarily for engineering students, this course covers mechanics, kinematics, dynamics, Newton's laws, work, energy, linear momentum, collisions.

PHY 1222 Physics for Engineering Students II**4 Q.H.**

(Prereq. PHY 1221; MTH 1124 or equiv. may be taken concurrently)

A continuation of PHY 1221, this course focuses on rotational dynamics, angular momentum, statics, harmonic motion, wave motion, sound, heat, and the First Law of Thermodynamics.

PHY 1223 Physics for Engineering Students III**4 Q.H.**

(Prereq. PHY 1222; MTH 1125 or equiv. may be taken concurrently)

A continuation of PHY 1222, the focus of this course is on electricity, electrostatics, Gauss's law, electric fields, potential, capacitance, resistance, current Ohm's law, circuits, the magnetic field.

PHY 1224 Physics for Engineering Students IV**4 Q.H.**

(Prereq. PHY 1223; MTH 1126 or equiv. may be taken concurrently)

A continuation of PHY 1223, this course covers magnetism: Ampere's law, induction, inductance, magnetic energy; electromagnetic oscillations, electromagnetic waves, polarization; ray optics: reflection, refraction, mirrors and lenses; wave optics: interference, diffraction, gratings.

PHY 1231 Physics for Science Majors I**4 Q.H.**

(Prereq. MTH 1143 or equiv. may be taken concurrently)

Topics include mechanics: kinematics, Newton's laws, circular motion, work energy, linear momentum. To take the laboratory for this course, register for PHY 1531 concurrently.

PHY 1232 Physics for Science Majors II**4 Q.H.**

(Prereq. PHY 1231; MTH 1144 or equiv. may be taken concurrently)

Topics include rotational motion, angular momentum, harmonic motion, wave motion, sound, heat and thermodynamics, kinetic theory. To take the laboratory for this course, register for PHY 1532 concurrently.

PHY 1233 Physics for Science Majors III**4 Q.H.**

(Prereq. PHY 1231; MTH 1145 or equiv. may be taken concurrently)

Topics include electricity and magnetism; circuits; electromagnetic waves; topics in modern physics. To take the laboratory for this course, register for PHY 1533 concurrently.

PHY 1241 Physics for Computer Science Majors I**4 Q.H.**

(Prereq. Two quarters calculus)

The first quarter of a three-quarter sequence. Topics include kinematics, dynamics, Newton's laws, gravity, work, energy, momentum, and collisions.

PHY 1242 Physics for Computer Science Majors II**4 Q.H.**

(Prereq. PHY 1241 and three quarters calculus)

The second quarter of a three-quarter sequence. Topics include circular and rotational motion, oscillations, waves, atomic physics, astronomy and cosmology, and relativity and its application to nuclear physics.

PHY 1243 Physics for Computer Science Majors III**4 Q.H.**

(Prereq. PHY 1242)

The third quarter of a three-quarter sequence. Topics include electricity and magnetism, semiconductors and semiconductor devices.

PHY 1251 Physics Review for Engineering Students**6 Q.H.**

(Prereq. One year of college physics; knowledge of elementary calculus)

This course offers an intensive review for students who have had previous college physics courses not equivalent to the engineering sequence PHY 1221-PHY 1224. Topics include fundamentals of mechanics, electricity, and magnetism with emphasis on the use of vectors and elementary calculus. Passing this course is equivalent to passing PHY 1223 and PHY 1224.

Introductory Physics Laboratories**PHY 1194 Physics Laboratory I*****2 Q.H.**

(Prereq. PHY 1191; PHY 1192 concurrently; B.E.T. majors only)

This course covers experiments from various physics topics that have been covered in PHY 1191 and, concurrently, in PHY 1192.

PHY 1195 Physics Laboratory II***2 Q.H.**

(Prereq. PHY 1194, PHY 1192; PHY 1193 concurrently; B.E.T. majors only)

This course is a continuation of PHY 1194, with experiments from topics in PHY 1192 and PHY 1193.

*Lab fee required.

PHY 1501 Physics Laboratory for the Life Sciences I 1 Q.H.

(Prereq. PHY 1201 concurrently)

This course is the first quarter of a two-quarter laboratory sequence accompanying PHY 1201 and PHY 1202.

PHY 1502 Physics Laboratory for the Life Sciences II 1 Q.H.

(Prereq. PHY 1501; PHY 1202 or PHY 1203 concurrently)

This course is a continuation of PHY 1501.

PHY 1521 Physics Laboratory for Engineering Students I 1 Q.H.

(Prereq. PHY 1223)

This course is the first of a two-quarter laboratory sequence in which the student performs experiments from various fields of physics.

PHY 1522 Physics Laboratory for Engineering Students II 1 Q.H.

(Prereq. PHY 1521 and PHY 1224)

This course is a continuation of PHY 1521

PHY 1531 Physics Laboratory for Science Majors I 1 Q.H.

(Prereq. PHY 1231 concurrently)

Focus is on laboratory experiments related to topics covered in PHY 1231.

PHY 1532 Physics Laboratory for Science Majors II 1 Q.H.

(Prereq. PHY 1531; PHY 1232 concurrently)

Focus is on laboratory experiments related to topics covered in PHY 1232.

PHY 1533 Physics Laboratory for Science Majors III 1 Q.H.

(Prereq. PHY 1531; PHY 1233 concurrently)

Focus is on laboratory experiments related to topics covered in PHY 1233.

Advanced Physics and Astronomy Courses**PHY 1301 Intermediate Mechanics 4 Q.H.**

(Prereq. PHY 1232 and PHY 1233; MTH 1243 concurrently)

Topics include classical mechanics in two and three dimensions; a review of Newton's laws; special emphasis on conservation theorems for energy, momentum and angular momentum; harmonic and wave motion.

PHY 1302 Electric and Magnetic Fields 4 Q.H.

(Prereq. PHY 1301; MTH 1244 concurrently)

This course focuses on the basic concepts of electric and magnetic fields, including electric and magnetic fields in free space and materials; Maxwell's equations in integral form.

PHY 1303 Modern Physics 4 Q.H.

(Prereq. PHY 1233, PHY 1224, or equiv.)

The course provides a review of experiments demonstrating the atomic nature of matter, the prop-

erties of the electron, the nuclear atom, the wave-particle duality, spin, and the properties of elementary particles. The course discusses, mostly on a phenomenological level, such subjects as atomic and nuclear structure, properties of the solid state, and elementary particles.

PHY 1304 Mathematical Physics 4 Q.H.

(Prereq. PHY 1233 and MTH 1244; MTH 1246 concurrently)

Topics include review of linear algebra and vector calculus; special functions and partial differential equations of physics; potential theory; functions of a complex variable.

PHY 1305 Thermodynamics and Kinetic Theory 4 Q.H.

(Prereq. PHY 1233 or PHY 1224; MTH 1244)

Topics include First and Second Laws of Thermodynamics; entropy and equilibrium; thermodynamic potentials; elementary kinetic theory; statistical mechanics and the statistical interpretation of entropy.

PHY 1311 Physics Review for Re-entry Students 4 Q.H.

(Prereq. Two years of physics)

This is a review course on the material covered by PHY 1401, PHY 1305, and PHY 1404. Topics include vector kinematics; generalized coordinates; Lagrange equations; harmonic and coupled oscillators, wave equation; physical optics, interference, diffraction, optics of solids, lasers; entropy and equilibrium, thermodynamic potentials; elementary kinetic theory; statistical mechanics.

PHY 1401 Classical Mechanics 4 Q.H.

(Prereq. PHY 1301 and MTH 1245)

This course covers advanced topics in classical mechanics, including vector kinematics; harmonic oscillator and resonance; generalized coordinates; Lagrange's equations; central forces and the Kepler problem; rigid body motion.

PHY 1402 Electricity and Magnetism I 4 Q.H.

(Prereq. PHY 1302; PHY 1304 or equiv.)

The first of a two-quarter sequence in electromagnetic theory, this course covers Maxwell's equations and their experimental basis; electrostatics and magnetostatics; the electromagnetic field in empty space; electromagnetic waves.

PHY 1403 Electricity and Magnetism II 4 Q.H.

(Prereq. PHY 1402 or equiv.)

A continuation of PHY 1402, this course focuses on energy and momentum in the electromagnetic field; electrodynamics; the interaction of matter and the field; radiation.

PHY 1404 Wave Motion and Optics 4 Q.H.

(Prereq. PHY 1302)

Topics include harmonic and coupled oscillators, wave equation; geometrical and physical optics; interference, diffraction, optics of solids, amplification of light; lasers.

PHY 1411 Introduction to Astrophysics and Cosmology 4 Q.H.

(Prereq. Three quarters of elementary physics)

The purpose of this course is to introduce the student to current ideas in astrophysics and cosmology, with emphasis on recent advances in this field. Topics include tools of the astronomer (gamma-, X-, UV-, optical-, infrared-, radio-telescopes, spectroscopes, spacecrafts, etc.); solar system; stellar properties (site luminosity); stellar spectra; Hertzsprung-Russell diagram; stellar energy sources (gravitational, nuclear); evolution of stars (birth, main sequence, red giants, white dwarfs, planetary nebulae, supernovae, neutron stars and pulsars, black holes and gravitational collapse); methods of interstellar and intergalactic distance measurement; our Milky Way galaxy; extragalactic objects (galaxies, clusters of galaxies, radio galaxies, quasars); cosmology (Olber's paradox; recession of galaxies, big bang theory, cosmic background radiation, formation of galaxies, the future of the universe).

PHY 1412 Plasma Physics 4 Q.H.

(Prereq. PHY 1224 or PHY 1302 or equiv.)

The aim of this course is to introduce the student to the study of plasma physics. The course will develop the fundamentals of plasma physics in a manner that does not require an extensive background in advanced physics.

PHY 1413 Introduction to Nuclear Physics 4 Q.H.

(Prereq. PHY 1303)

Topics include nuclear structure, nuclear masses, radioactivity, nuclear radiation, interaction of radiation and matter, detectors, fission, nuclear forces; elementary particles.

PHY 1414 Introduction to Solid State Physics 4 Q.H.

(Prereq. PHY 1303 or CHM 1383; PHY 1305 or equiv.)

This course offers a semiclassical treatment of the thermal, magnetic, and electrical properties of crystalline solids. Topics include X-ray diffraction and the reciprocal lattice, elasticity and lattice vibrations, specific heat, properties of insulators, magnetism in insulators and metals, introduction to the band theory of metals.

PHY 1415 Quantum Mechanics I 4 Q.H.

(Prereq. PHY 1303 or CHM 1383; PHY 1304 or equiv.)

The first of a two-quarter sequence in quantum mechanics, this course focuses on observation of macroscopic and microscopic bodies, the uncertainty principle, wave-particle duality, probability amplitudes, Schrodinger wave theory, one-dimensional problems.

PHY 1416 Quantum Mechanics II 4 Q.H.

(Prereq. PHY 1415)

A continuation of PHY 1415, this course covers discrete and continuous states, Schrodinger equation in three dimensions, angular momentum, general theory of quantum mechanics, applications.

PHY 1551 Electronics for Scientists I 4 Q.H.

PHY 1551 and PHY 1552 form a two-quarter sequence covering electronic techniques for experimental research in many different fields of science. Topics include principles of semiconductor devices; analog techniques (amplification, feedback, integration); digital techniques (counting, multiplexing, logic); design of electronic subsystems (analog-to-digital converters, phase-sensitive detectors, data-logging systems); understanding specifications of commercial electronic equipment. Lab examples make use of up-to-date integrated and discrete devices such as are currently used in the electronic industry.

PHY 1552 Electronics for Scientists II 4 Q.H.

(Prereq. PHY 1551)

This course is a continuation of PHY 1551.

PHY 1555 Wave Laboratory 4 Q.H.

(Prereq. PHY 1302 or PHY 1224)

This course offers a general treatment of the problems of mechanical and electromagnetic radiation as wave phenomena. Topics include the differential wave equation and its application to selected topics; interference and diffraction theory from the standpoint of the Huygens-Fresnel and Kirchhoff formulations; selected experiments in acoustics, optics, and microwaves to illustrate these problems.

PHY 1557 Advanced Physics Laboratory 4 Q.H.

(Prereq. PHY 1551 and PHY 1552)

This course presents special projects in modern experimental physics; including electronic instrumentation used in measuring physical quantities and use of microprocessors.

PHY 1561 Project Laboratory 4 Q.H.

(Prereq. Permission of instructor)

This course allows students to select and carry out individual projects involving instrumentation and computation. The projects involve the development of some aspect of instrumentation and/or computation in an ongoing research project, and the preparation of a final report. The student will be supervised by the project leader and the course instructor. Although the course carries 4 Q.H. credit, it is taken in successive winter and spring quarters.

PHY 1811 (B, C, etc.) Independent Study	1 Q.H.
PHY 1821 (B, C, etc.) Independent Study	2 Q.H.
PHY 1831 (B, C, etc.) Independent Study	3 Q.H.

PHY 1841 (B, C, etc.) Independent Study	4 Q.H.
PHY 1885, PHY 1886, PHY 1887 Junior-Senior Honors Program	(each) 4 Q.H.
For prerequisites and other details, see the section on the Junior-Senior Honors Project on page 1.	

Political Science

POL 1110 Introduction to Politics **4 Q.H.**
This course offers a broad-based introduction to contemporary political science. Areas covered include a consideration of basic concepts in political analysis (e.g., power, authority, and sovereignty); the role of governmental institutions in the making of public policy; public opinion and processes of political representation; contemporary political ideologies; and the scope and methods of political science.[†]

POL 1111 Introduction to American Government **4 Q.H.**
The course provides an analysis of the American governmental and political processes by focusing on constitutionalism, liberties, institutions, and political behavior.[†]

POL 1112 Introduction to International Relations **4 Q.H.**
The course focuses on elements of international relations, including sovereign power, and limitations on the behavior of nation-states. International law, diplomacy, the politics of international economic relations, and contemporary problems in international relations—peace and war, the arms race, detente, human rights, technology, population, and neoimperialism—will be covered.[†]

POL 1113 Introduction to Foreign Governments and Societies **4 Q.H.**
(Formerly Introduction to Comparative Government)
The course offers a comparative study of parliamentary democracy in Western Europe; Communist totalitarianism in the Soviet Union, China, and Eastern Europe; and variations of these governmental systems in the "third world" countries of Asia, Africa, and the Middle East.

POL 1260 Public Policy Analysis **4 Q.H.**
An analysis and evaluation of public policy in the United States.

POL 1261 Public Administration **4 Q.H.**
(Prereq. POL 1111)
Introduction to the theory and practice of public administration, with special emphasis on the generalities of institutions, processes, and behavior of bureaucratic organizations.

POL 1262 Organization Theory **4 Q.H.**
Provides a broad overview of organization theories, their history, and development. Specific attention is given to developing a paradigm for public organizations that focuses on the relationships of economic, democratic, bureaucratic, technological, and humanistic imperatives. The student will prepare a research paper and consider the implications of this paradigm for future organizations.

POL 1266 Public Personnel Administration **4 Q.H.**
(Prereq. POL 1261)
Designed to be an overall introduction to the field of public personnel administration. It includes examination of selected topics such as recruitment, selection, classification, case development, equal opportunity, public employee unionism, and collective bargaining.

POL 1267 Public Budgeting **4 Q.H.**
(Prereq. POL 1261)
Focuses on the function of budgeting in a variety of governmental contexts, specifically, the appropriations process, the budget as a management tool, and the public policy impacts of the budget. Budgeting techniques are emphasized within this context.

POL 1300 Conceptual Foundations of Contemporary Political Analyses **4 Q.H.**
The course provides an introduction to the conceptual problems associated with the study of politics, including scientific method and a general overview of various methodological perspectives (e.g., systems theory, game theory, and survey analysis) as practiced by contemporary political scientists.

POL 1301 Research Methods I **4 Q.H.**
The course offers an introduction to the principal quantitative methods used in political analysis, public administration, political behavior, international relations, and policy sciences. Emphasis is on basic statistical techniques, survey methods, and SPSS programming.

[†]Satisfies Core Curriculum Category II requirement.

POL 1302 Research Methods II**4 Q.H.**

(Prereq. POL 1301)

This is an intermediate course in quantitative analytic techniques with emphasis on practical problem solving in areas of concentration, particularly political behavior, policy sciences, public administration, and international relations. Includes intermediate statistical techniques such as multivariate analysis and casual modelling, using SPSS and drawing upon machine-readable data.

POL 1303 Political Behavior**4 Q.H.**

(Prereq. POL 1110)

This course examines selected topics in contemporary political science from a political behavior perspective. Topics include political attitude formation and change, ideology, socialization, public opinion and voting behavior, political campaigning, political violence, and empirical democratic theory.

POL 1304 Practical Politics**4 Q.H.**

(Prereq. POL 1111)

This course is designed to accentuate and systematically treat some of the problems of organizing for effective citizen action, partisan and nonpartisan, at the grass-roots level. An exploration of roles in political campaigning.

POL 1306 Politics in Western Europe**4 Q.H.**

(Prereq. POL 1113)

The course offers a comparative analysis of political culture, federal and unitary forms of government, and executive-legislative relations on the national level in England, France, and West Germany.

POL 1307 European Political Parties**4 Q.H.**

(Prereq. POL 1113)

The focus of this course is on political party organization and voter behavior in England, France, and Germany, with emphasis on party ideologies, strategies, campaigns, and elections, as well as socialization. Recruitment, and participation of voters in the political process.

POL 1308 The Politics of Poverty**4 Q.H.**

This course is concerned with what is referred to as the poverty system: how and why there is poverty, how it affects people's lives, and how it can be eliminated. As a discussion-centered course, relying also on simulations, small-group work, and experience-based learning, it examines the relations between poverty, racism, and the economic, political, and administrative systems. A number of alternatives will be evaluated and an opportunity provided for clarifying individual assumptions and feelings about poverty.

POL 1309 The Politics of Imperialism**4 Q.H.**

(Prereq. POL 1112)

The course focuses on the political dynamics of penetration of foreign economies and foreign politics, considering such elements as military in-

tervention, foreign aid, and the impact of the multinational corporations.

POL 1310 American Ideology**4 Q.H.**

An analysis of the main American ideologies, including liberalism, neoliberalism, conservatism, neoconservatism, nationalism, etc. Examination of the historic roots of each ideology and its impact on American politics. An attempt to understand the ongoing interaction of political ideology and the political process in contemporary American society.

POL 1312 Politics and the Mass Media**4 Q.H.**

This course analyzes several facets of the mass media; the role of newspapers, radio, and television in public opinion formation; their use and effectiveness in political campaigns; their objectivity and/or bias in reporting the news; their impact on political parties and the distribution of power between Congress and the President.

POL 1313 International Organization**4 Q.H.**

(Prereq. POL 1112)

The course focuses on development of international organizations with special emphasis on the United Nations system. (Public Administration elective)

POL 1315 The Politics of the Criminal Justice System**4 Q.H.**

(Prereq. POL 1111 or POL 1377)

This course focuses on the criminal justice system from arrest by police to appeal to the Supreme Court of the United States. The roles of police, lawyers, judges, prosecutors, juries, and correction officers are examined.

POL 1316 Contemporary Revolutionary Politics**4 Q.H.**

(Prereq. POL 1112 or POL 1113)

Examination of political development in selected revolutionary societies, including Cuba.

POL 1317 Law and Society**4 Q.H.**

(Prereq. Open only to upperclass, nonpolitical-science majors.)

This course examines the theory and practice of the American legal process and its impact on values. Also an analysis of the impact on these values of the military-industrial-technological complex.

POL 1318 State and Local Government**4 Q.H.**

(Prereq. POL 1111)

This course introduces students to the political and administrative context of state and local government and surveys the structure, function, and politics of states and localities within the context of the United States federal system. (Public Administration elective)

POL 1320 Political Parties, Pressure Groups, and Elections 4 Q.H.

An analysis of political parties and pressure groups in the American political system, with attention given to policy making, elections, voting behavior, and state and national political trends.

POL 1321 Eurocommunism 4 Q.H.

This course presents a study of the domestic and foreign policies of the Spanish, French, and Italian Communist parties with special attention to their relations with the international communist movement.

POL 1322 World Politics 4 Q.H.

The course examines political continuum and change in the international system by observing both traditional actors, such as nation-state, and modern actors, such as multinational corporations, in relation to their goals and the means each uses to attain them. Primarily for non-political-science majors; not open to anyone who has taken POL 1112, Introduction to International Relations.

POL 1324 Urban Politics 4 Q.H.

The course provides an analysis of the political, administrative, economic, and social dynamics of urban areas from a historical perspective. (Public Administration elective)

POL 1325 Human Services Administration 4 Q.H.

The ways in which human services are provided by the political, economic, and bureaucratic systems to low-income citizens are studied. The course is designed to help students develop knowledge of the public policy process, human services organizations, and delivery systems, and awareness of their values and potential as human services professionals. A discussion-based course for students interested in human services. (Public Administration elective)

POL 1327 Sex Roles In American Politics 4 Q.H.

The course explores the relation between what is and what ought to be—and why—in the roles of women in American politics. Topics include the traditional roles of women in politics, the suffrage movement, the woman as citizen and voter, the role of sex in achieving power and in political efficacy, and the place of women in "new politics." Political action to promote women's issues and modern feminism will also be covered.

POL 1328 Women in Public Management 4 Q.H.

Examination of the challenges and problems commonly experienced by female managers working in complex, public sector organizations. Emphasis will be placed on strategies for elevating such problems. Special attention will be focused on career development for women in managerial roles.

POL 1329 American Social Welfare Policy 4 Q.H.

An introduction to social welfare policy with a special emphasis on programs and services in the contemporary United States. Theoretical frameworks for analyzing social welfare policy will be discussed, then attention will focus on the substantive policy areas of welfare, mental health, and social security. The course will also explore various issues and processes related to the design, administration, and implementation of social welfare policy in the context of the American socio-political system.

POL 1330 Minority Politics 4 Q.H.

This course examines the voting behavior of minority populations in the United States and political developments and trends that impact on the nation's minority communities.

POL 1332 Government and Politics of Japan 4 Q.H.

(Prereq. POL 1112 or POL 1113)

Examines Japan's political development from the Meiji Restoration to the present, exploring the unique form of democratic government practiced in Japan and evaluating the effects of Japanese political theory, war, the American occupation, the Emperor, and Japanese political and cultural values on Japan's political institutions. Japan's present and future impact on the international system is also considered.

POL 1333 Introduction to Urban and Regional Planning 4 Q.H.

The historical influences on American urban and regional planning and the contemporary institutional, theoretical, and technical issues in planning.

POL 1335 The American Presidency 4 Q.H.

This course examines the presidential electoral process and the constitutional and extraconstitutional powers of the American President. It studies presidential leadership styles and analyzes the relationship between the executive branch and Congress, the Court, the bureaucracy, and the media.

POL 1336 American Constitutional Law 4 Q.H.

(Prereq. POL 1111 and junior or senior status) Employing excerpts of United States Supreme Court decisions and other reading materials, this course attempts an analysis of some of the theoretical, structural, and substantive issues inherent in and relevant to the American constitutional system.

POL 1337 American Foreign Policy 4 Q.H.

The course examines formulation and conduct of foreign policy; role of the United States in politics since 1945.

POL 1339 Current Political Issues 4 Q.H.

The course provides an analysis of the constitutional and political background of selected con-

temporary public issues. Primarily for non-political-science majors.

POL 1340 Communism in Eastern Europe

4 Q.H.

(Prereq. POL 1113)

The course focuses on the Communist governments of Eastern Europe, with emphasis on their growing independence from Soviet Russia. Recent political change, economic liberalization, and new orientation in foreign policy.

POL 1342 Government and Politics in Africa

4 Q.H.

(Prereq. POL 1113)

Topics include the governmental systems, political parties, socioeconomic problems, and foreign policies of selected states north and south of the Sahara.

POL 1343 Politics and Violence in Northern Ireland

4 Q.H.

This course will analyze the causes of violence in Northern Ireland. Although historical, sociological, and economic roots of the conflict will be considered, the major focus will be on politics. The international dimension (the roles of southern Ireland, the United States, etc.), paramilitary organizations, legal political parties and groups, and potential solutions will be discussed. Comparative parallels will be drawn, including possible lessons for the United States.

POL 1345 Government and Politics in the Middle East

4 Q.H.

Approaches the political, economic, military, and ideological factors within the Arab states and Israel, inter-Arab politics, the Arab-Israeli conflict, and the great power rivalry in the region.

POL 1347 Soviet Government

4 Q.H.

(Prereq. POL 1113)

The course offers a study of Soviet political origins and behavior, with emphasis on recent changes in the party and state apparatus, the economy, and the administration of justice.

POL 1348 Soviet Foreign Policy

4 Q.H.

The course focuses on the evolution of Soviet foreign policy since 1917, with emphasis on the development of the international communist movement and the onset of the East-West ideological conflict.

POL 1350 American Legislative Process

4 Q.H.

This course offers a study of national and state legislative structure, function, and behavior. It examines Congress and various state legislatures as policy-making bodies and assesses their impact and importance in the political system.

POL 1351 Techniques and Practices of Public Management

4 Q.H.

This course is oriented toward practical skills and techniques of public management and employs

the case method in examining typical management problems at different levels of government. Time and resource management for public sector managerial personnel is also covered.

POL 1353 Law and Personal Morality

4 Q.H.

An examination of the use of political power to enforce standards of personal morality and behavior in contemporary American society. Subjects considered will include pornography, sexual privacy and expression, Sunday closing laws, abortion, and prostitution.

POL 1354 The Politics and Policies of Developing Nations

4 Q.H.

The course presents a survey of recent political and related change among third-world countries of Africa, Latin America, and Asia. Topics included are the heritage of colonialism and achievement of independence, the realities of cultural pluralism, revolution and political violence, institution building, political leadership and role of ideology, political parties, the military in politics, and the international aspects of political modernization.

POL 1355 Ethnic Conflict in International Perspective

4 Q.H.

The course offers a comparative study of ethnic conflict, with its religious, linguistic, racial, and economic roots, in such places as Nigeria, Cyprus, Canada, Northern Ireland, Belgium, and the United States. World order implications and Great Power consequences of such confrontations will also be studied.

POL 1357 Totalitarianism and Dictatorship

4 Q.H.

(Prereq. POL 1113)

The course presents an analysis of totalitarianism, dictatorship, and autocracy, including study of historical background, characteristics, theories of origin, nature, and significance; evaluation of techniques, ideologies (e.g., Marxism-Leninism), policies, and institutions. Particular attention is given to Soviet and German experiences.

POL 1359 Comparative Public Administration

4 Q.H.

The course provides a comparative study of the approaches to public administration in selected democratic governments in the United States and Europe.

POL 1360 The Politics of Revolution and Change

4 Q.H.

(Prereq. POL 1113)

The course offers an analysis of revolution and change, contemporary and historical, with attention to both theory and practice. Topics discussed include major trends in contemporary politics and society, and the relationship between political change and technological, scientific, or social change.

POL 1362 Civil Liberties 4 Q.H.

(Prereq. POL 1350 and junior or senior status)
Employing United States Supreme Court decisions and other reading material, this course examines the substantive and procedural guarantees of the Bill of Rights and the Fourteenth Amendment and their relation to a liberal democratic society.

POL 1363 Public Management 4 Q.H.

(Prereq. POL 1261)
What problems are entailed in the management of public agencies? How do public managers seek to solve these problems? These questions are explored through the use of descriptive, analytical, and case materials. (Public Administration elective)

POL 1364 Politics and Economic Problems 4 Q.H.

(Prereq. POL 1111 or POL 1377)
The course offers a survey of the relation between economic developments and political processes in the United States. Among the topics considered are government planning of the economy, monopoly and government regulation, government programs to promote social welfare, and the impact of Federalism on the political-economic system.

POL 1365 British Politics and Government I 4 Q.H.

A study of British political culture, in particular traditional political values, attitudes, and expectations; the historical, economic, societal, and cultural determinants of them; and their impact on the working of the British political system today. Special attention is given to recent changes in British thought and society, i.e., in the period from World War II to the present, and how they too have affected contemporary British political behavior.

POL 1366 British Politics and Government II 4 Q.H.

A study of British political participation that includes voting, interest groups, and political parties; and governmental institutions such as the monarchy, the Cabinet, Parliament, and the civil service. Special attention is given to leadership decision-making, in particular ministerial accountability, and to current public policy in the areas of the economy, social security and welfare, and Ireland.

POL 1368 Government and Politics of Latin America 4 Q.H.

The governmental systems, political parties, socioeconomic problems and foreign policies of Latin American states. Focus will be on political change.

POL 1370 Political Theory 4 Q.H.

(Prereq. Junior or senior status or consent)
An analytic approach to the study of key political concepts: power, equality, freedom, authority,

obligation, ethics, law, rights, punishment, state, sovereignty.

POL 1371 Government and Politics of China 4 Q.H.

Topics include government and party organization, socioeconomic problems and policies, concentrating attention on the influence of history, technology, and ideology as determinants of attitudes and behavior.

POL 1372 China's Foreign Relations 4 Q.H.

The course examines China's traditional view of international relations and its modification first by contact with the West and later by Marxism-Leninism. The course investigates China's role in changing the international system to accord more with its perspectives on sovereignty and equality and the principles of socialist internationalism.

POL 1373 Political Thought I 4 Q.H.

(Prereq. Junior status or permission of instructor)
An analytical and historical examination of the great political thinkers and the main trends of political thought from the Grecian age to the Renaissance.

POL 1374 Political Thought II 4 Q.H.

(Prereq. POL 1373)
An analytical and historical examination of the great political thinkers and the main trends in political thought from the Renaissance to the twentieth century.

POL 1376 American Political Thought 4 Q.H.

The contributions to political theory of the main social, economic, political, intellectual, and philosophic movements in America from the colonial period to the present.

POL 1377 American Political Process 4 Q.H.

The course offers a general analysis of the American political system with emphasis on the topic of civil liberties. Not open to political science majors or anyone who has taken POL 1111, Introduction to American Government.

POL 1378 Contemporary Political Thought 4 Q.H.

Analysis of current ideals, ideologies, and political movements, including existentialism, neo-Marxism, black power, women's liberation. The decline of ideology and behavioralism.

POL 1380 Governmental Accounting 4 Q.H.

(Prereq. POL 1261)
Basic accounting principles and methods used by government agencies including the utilization and interpretation of financial statements, auditing, and the application of electronic data processing in government record keeping. (Public Administration elective)

POL 1382 Intergovernmental Relations 4 Q.H.

An analysis of the relationships existing among national, state, and local levels of government in the United States and of the changing patterns of those relationships.

POL 1384 Arab-Israeli Conflict 4 Q.H.

The Arab-Israeli confrontation has its own dynamics, and its nature has changed through the decades. This course analyzes its interaction with the internal politics of the Arab states and Israel, Pan-Arab politics, and the role of the great powers in the region.

POL 1385 Housing and Community Development 4 Q.H.

The course offers a review of historical metropolitan growth patterns and the influence of public policy on the development of American cities. Topics such as urban renewal, suburbanization of low- and moderate-income housing and new communities are discussed. (Public Administration elective)

POL 1386 International Law 4 Q.H.

(Prereq. POL 1112)
Topics include territory and jurisdiction of states, treaties, recognition, peaceful settlement of disputes, resort to force.

POL 1388 Political Polling and Survey Research 4 Q.H.

(Prereq. POL 1301)
Survey research is the most common approach to program evaluation. This course involves an examination of the entire survey research process, including survey design, sampling, questionnaire design, survey administration, data processing, and data analysis. Some statistical analysis will also be involved.

POL 1410 Seminar in American Government 4 Q.H.

(Prereq. Senior political science major and permission of instructor)
An in-depth study of selected topics in American government.

POL 1411 Seminar in International Relations 4 Q.H.

(Prereq. Senior political science major and permission of instructor)
This course offers an in-depth study of selected topics in international relations.

POL 1412 Seminar in Comparative Politics 4 Q.H.

(Prereq. Senior political science major and permission of instructor)
This course offers an in-depth study of selected topics in comparative politics.

POL 1413 Senior Seminar in Political Science 4 Q.H.

(Prereq. Senior political science major)
This course offers an in-depth study of selected topics in political science.

POL 1415 Seminar in Public Law and Social Issues 4 Q.H.

(Prereq. Junior or senior status and permission of instructor)

This course examines some of the continuing and perplexing social problems through the media of legal writings and recent court cases. Issues to be discussed include abortion, euthanasia, family planning, criticism of public officials, political activism, the right of privacy, obscenity, racial and economic discrimination.

POL 1800, POL 1801, POL 1802 Directed Study (each) 4 Q.H.

This course offers independent work on chosen topics under the direction of members of the department and is limited to qualified juniors and seniors with approval of instructor.

POL 1803 Internship in Politics 4 Q.H.

With department approval, students may be eligible to receive credit for internship experience. An internship is under the supervision of a faculty member.

POL 1804 Practicum in Lobbying 4 Q.H.

This is a fieldwork course in which students will become involved in supervised lobbying activity on the national or state levels of politics.

POL 1806 Honors Seminar in Political Thought 1 Q.H.

This course deals with specialized topics in political theory.

POL 1807, POL 1808, POL 1809, POL 1810 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 1.

INT 1217 Water, Water 4 Q.H.

This course is an interdisciplinary introduction to our most precious resource. Water has affected our bodies, our planet, our history, our culture. How we manage it will shape our future. Because of increasing demand, waste, and pollution, we are depleting—and risk destroying—the limited supply of usable fresh water. This course will focus on water through scientific, historical, and cultural viewpoints, and survey contemporary water problems in all their dimensions—political, economic, and technological.

Psychology

For specific scheduling information, students should request a current course listing at the main office of the Psychology Department, 282 Nightingale Hall. Students should note that courses are presented by category and are not listed in numerical sequence.

Courses

PSY 1110 Perspectives in Psychology 4 Q.H.

A survey of the fundamental principles and issues of the major areas of contemporary scientific psychology. The study of psychology is approached as a method of inquiry as well as a body of knowledge using five different perspectives: neurobiological, psychodynamic, behavioral, cognitive, and humanistic.[†]

PSY 1111 Foundations of Psychology I 4 Q.H.

A survey of the fundamental principles and issues of the major areas of contemporary scientific psychology. The study of psychology is approached as a method of inquiry as well as a body of knowledge. Areas emphasized are biological bases of behavior, principles of learning, psychological testing, personality dynamics, psychopathology, and therapeutic approaches.

PSY 1112 Foundations of Psychology II 4 Q.H.

(Prereq. PSY 1111)

A continuation of PSY 1111 with emphasis on the areas of lifespan development, sensory and perceptual processes, cognition and memory, language, motivation and emotion, and social influences on behavior.

PSY 1211 Statistics in Behavioral Science II

4 Q.H.

The course offers an introduction to descriptive statistics (scales of measurement, frequency distribution and graphs, measures of central tendency, dispersion and correlation, standard scores, and the unit normal curve), and probability theory (permutations, combinations, and the binomial theorem).

PSY 1212 Statistics in Behavioral Science II

4 Q.H.

(Prereq. PSY 1211)-

The course offers a general presentation of hypothesis testing, including parametric and non-parametric tests, with emphasis on formulating hypotheses and choosing appropriate scales of measurement, tests, and confidence levels. (Continuation of PSY 1211)

PSY 1231 Learning and Motivation I 4 Q.H.

(Prereq. PSY 1112)

Application of basic behavioral principles to behavioral development, behavior modification, language development, and programmed learning, and their relations to theoretical considerations in the learning process.

PSY 1241 Human Behavioral Development I

4 Q.H.

This course examines the change in behavioral processes from conception up to, but not including, adolescence. Topics include: biological bases of behavioral development, sensory and motor function, learning, socialization, speech and language, imitation, moral development, dependency, aggression, and abnormalities of development. Major theories of development and child-rearing practices are examined. Although relevant comparative research is considered, the emphasis is on human development.

PSY 1242 Human Behavioral Development II

4 Q.H.

(Prereq. PSY 1241)

This course continues the examination of behavioral change from adolescence to death. Topics include: biological, intellectual, learning and memory, personality, and social processes. Different methods of study and theories of adult development are assessed.

PSY 1261 Bilingualism

4 Q.H.

Half of the world's population is bilingual, that is, uses two or more languages on a regular basis. And yet bilingualism remains a poorly understood phenomenon surrounded by a number of myths, such as: bilinguals are found in bilingual countries and are equally fluent in their languages; bilingual children suffer from cognitive impoverishment; bilingual education hinders the assimilation of minority groups. The course will review all aspects of bilingualism (in the world, in society, in the child and the adult), as well as discuss topics such as biculturalism and language change.

PSY 1262 Language and Cognition

4 Q.H.

(Prereq. PSY 1112)

This course provides a basic introduction to human cognition (cognitive psychology) and the psychology of language (psycholinguistics). On the subject of cognition, the course emphasizes the mental processes involved in the acquisition, organization, and use of knowledge, including pattern recognition and memory. On the subject of psycholinguistics, it focuses on the nature and structure of language, various theories of human production and perception of language, and related experimental findings.

PSY 1271 Social Psychology

4 Q.H.

(Prereq. PSY 1112 or permission of Instructor)

The course provides an introductory survey of social psychology. Topics include aggression, attribution, attitude formation, change, measure-

[†]Satisfies Core Curriculum Category II requirement.

ment, conformity, impression formation, group processes (social facilitation, deindividuation, etc.).

PSY 1272 Personality I 4 Q.H.
(Prereq. PSY 1112)

The course offers a systematic study of the normal personality and its development. Topics include behavioral, dynamic, and constitutional determinants, assessment of personality, research, and a survey of the major theories of personality.

PSY 1273 Personality II 4 Q.H.
(Prereq. PSY 1272)

Continuation of PSY 1272.

PSY 1331 Learning and Motivation II 4 Q.H.
(Prereq. PSY 1231)

Continuation of PSY 1231 with emphasis on biological constraints on learning, e.g., punishment, anxiety, aggression, addiction; and other topics of individual interest.

PSY 1332 Programmed Learning 4 Q.H.
(Prereq. PSY 1231)

Development of programmed instruction has been one of the products of basic behavioral research. After students master relevant basic research literature, they are expected to review and evaluate existing instructional programs in light of the underlying behavioral principles. Programs are selected from those useful in the normal and special education classrooms, i.e., complex academic subject matter and individual problem areas.

PSY 1351 Physiological Bases of Psychology I 4 Q.H.
(Prereq. PSY 1112)

This is an introduction to the relation between brain function and human behavior. Topics include how nerve cells function individually and work together both in small networks and in the nervous system; the structure of the nervous system; how our sense organs provide the nervous system with information about the outside world; how the brain controls movement; and how psychological concepts such as perception and learning may relate to brain activity.

PSY 1352 Physiological Bases of Psychology II 4 Q.H.
(Prereq. PSY 1351)

A continuation of PSY 1351 in which the relation between brain function and more complex behavior is examined. Topics include the multiple kinds of sensory information and the neuronal and hormonal control systems involved in eating, drinking, sexual and reproductive behavior; how brain activity is related to emotion, sleep, wakefulness, and memory; disorders of behavior and of the brain.

PSY 1353 Comparative Psychology and Ethology 4 Q.H.
(Prereq. PSY 1112 or permission of instructor)

This introductory-level course in animal behavior surveys a wide range of species (reptiles, birds, fish, and mammals, including humans) to find similarities and differences in the behavioral processes and physiological mechanisms by which individual organisms and species adapt to their environments. The first section of the course focuses on adaptive specializations exhibited by animals in learning about their environments during early development and as adults. The second section examines problems of social organizations at the individual level: how animals communicate with each other and transmit "cultural" skills; mechanisms underlying cohesion and dispersal (e.g., reproduction and aggression); and the adaptive advantages of being social or asocial. The final section provides students with an unusual opportunity to apply concepts and experimental methods they have learned by actually doing a short field study of animal behavior at The Boston Zoological Park.

PSY 1354 Functional Neuroanatomy 4 Q.H.
(Prereq. PSY 1112)

Aimed primarily at the study of the human nervous system, this course focuses on study of the cellular structure of the nervous system, including a cell's organelles, followed by a short study of the embryological development of the nervous system. Systematic study of the nervous system beginning in the spinal cord and ending in the cerebral cortex with primary emphasis on fiber connections. A continuous attempt to correlate structure with behavioral activity.

PSY 1361 Introduction to Phonetics 4 Q.H.

The course offers an introduction to the nature of the speech signal from articulatory, perceptual, and acoustic points of view. Topics include sound measurement, sound classes, and a survey and comparison of speech sounds used in languages in the world. Stress, tone, and intonation. Phonetic classification and transcription of speech as practical tools for students of languages, linguistics, and speech and hearing science.

PSY 1362 Child Language 4 Q.H.
(Prereq. PSY 1262, linguistics, or permission of instructor)

The course provides a study of the manner in which language develops in children.

PSY 1363 Linguistics of American Sign Language 4 Q.H.
(Prereq. ASL 1101 or permission of instructor)

Offers students an introduction to basic issues in linguistics through examination of the structural properties of American Sign Language and its comparison with other languages having similar properties. Topics to be covered include phonology (formational properties of signs), morphology

(word formation rules, derivation, and inflection; complex verbs, classifiers, verb modulations), semantics (the meaning structure of signs), syntax (the structure of the ASL sentence), and discourse and narrative structure (the structure of ASL utterances in terms of old versus new information and the structure of ASL narratives).

PSY 1364 Cognition 4 Q.H.
(Prereq. PSY 1262)

Continuation of PSY 1262, focusing on cognition. This course emphasizes the analysis of perception, memory, and learning within an information-processing framework. Also considered are selected topics in cognitive development.

PSY 1365 Language and the Brain 4 Q.H.

Linguistic behavior from a neuropsychological viewpoint. Models of how the nervous system, and the brain in particular, controls the production, perception, and internal manipulation of language. Localization of cerebral functions and hemispheric lateralization. Experimental and clinical evidence for functional models. Aphasia and other language pathologies. Schizophrenic language. Evidence from "slips of the tongue." The bilingual brain. Comparisons of speech, sign language, and writing systems. Interpretation and translation.

PSY 1373 Abnormal Psychology I 4 Q.H.
(Prereq. PSY 1272 or PSY 1241)

This course offers a study of the abnormal personality, including a historical survey and a discussion of such issues as anxiety, defense mechanisms, and the criteria of psychopathology. Also examined are the symptomatology, etiology, and dynamics of neuroses (hysteria, phobia, obsession, and compulsion) and of psychosomatic disorders. Details of case histories will be discussed.

PSY 1374 Abnormal Psychology II 4 Q.H.
(Prereq. PSY 1373)

The course offers a survey of psychological and somatic therapies. Symptomatology, etiology, dynamics, and therapy of psychoses (schizophrenia, paranoia, mania, depression). Sociopathic and organic disorders.

PSY 1381 Sensation 4 Q.H.
(Prereq. PSY 1112; PSY 1351 is highly recommended)

The course provides an introduction to the study of our senses, with emphasis on hearing, touch, taste, and smell. Students have the opportunity to learn how we measure our sensory abilities. Findings are closely related to the functioning of sensory organs—ears, skin, mouth, and nose—and of the sensory nervous system.

PSY 1382 Perception 4 Q.H.
(Prereq. PSY 1112; PSY 1351 is highly recommended)

The course offers a study of our awareness of the world around us exemplified primarily by visual

perception. Topics are explored in group discussions and include light, visual sensory mechanisms, color vision, illusions, consciousness, and dreams.

PSY 1431 Behavior Therapies 4 Q.H.
(Prereq. PSY 1112)

The course offers a study of successful projects that have provided effective remediation and rehabilitation in institutions for the mentally ill, the mentally retarded, and the developing human (schools).

Directed Study—Honors Courses

PSY 1890, PSY 1891, PSY 1892, PSY 1893, PSY 1894 Directed Study (each) 4 Q.H.

(Prereq. Permission of instructor)

This course offers independent work under the direction of the Psychology Department, usually in a research project in one of the department laboratories. Faculty members normally require completion of advanced laboratory courses in the area of research interest, but this is a matter of individual discussion. Students interested in Directed Study should consult a departmental adviser.

PSY 1895, PSY 1896, PSY 1897, PSY 1898, PSY 1899 Junior-Senior Honors Program

(each) 4 Q.H.

For details contact the Honors Office, 183 Holmes.

Laboratories

PSY 1511 Experimental Design in Psychology 4 Q.H.*

(Prereq. PSY 1112 and PSY 1212)

The course focuses on the experimental method in the design, execution, analysis, and reporting of psychological investigations of humans and animals.

PSY 1531 Learning and Motivation Laboratory 4 Q.H.*

(Prereq. PSY 1212 and PSY 1231)

Through direct experience, students have the opportunity to gain proficiency in laboratory analysis of behavior and in evaluating common generalizations about human behavior. Students are expected to design and perform experiments in animal and human learning, memory, decision processes, concept formation, and other topics of individual interest.

PSY 1532 Behavior Modification Laboratory 4 Q.H.*

(Prereq. PSY 1531 or PSY 1351, and permission of instructor)

Students have the opportunity to participate in education and training of severely and profoundly

*Lab fee required.

retarded residents at the Walter E. Fernald State School. Learning theory principles are applied to teaching new skills and to treating inappropriate behavior. Students have the opportunity to write individual and group training programs, implement them in a classroom setting, and learn methods for evaluating program success.

PSY 1551 Laboratory in Neuropsychology 4 Q.H.*

(Prereq. PSY 1651 or PSY 1351 or permission of instructor)

Students will conduct three separate research projects of which the first two will use rats and the third will use humans as subjects. The three projects will investigate: 1) the effects of intracranial electrical stimulation of reward systems in the rat brain; 2) electroencephalogram (EEG) records of different phases of sleep; and 3) lateralization of function between the left and right cerebral hemispheres. Students will carry out all the phases of experimentation including surgery, behavioral tests, frozen sections and staining of brain tissue in preparation for histological examination of electrode placements, and data analyses. This course will end with oral presentations by students of their research findings.

PSY 1552 Sensory Physiology Laboratory 4 Q.H.*

(Prereq. PSY 1351)

Experiments are performed to illustrate the physiological techniques in sensory psychology including electrical recordings of some activities that accompany visual, auditory, and cutaneous activity.

PSY 1562 Laboratory in Psycholinguistics 4 Q.H.*

(Prereq. PSY 1211 and PSY 1262)

The course provides students the opportunity to acquire first-hand experience in conducting research on problems in the psychology of language. Students are involved in all aspects of each experiment, including collecting and analyzing data and preparing reports. Classroom discussion focuses both on the particular experiments conducted and on the implications of the experimental findings for broader issues in the psychology of language.

PSY 1564 Cognition Laboratory 4 Q.H.*

(Prereq. PSY 1212 and PSY 1364)

Experiments related to topics in PSY 1262 and PSY 1364.

PSY 1571 Laboratory in Social Psychology 4 Q.H.*

(Prereq. PSY 1212 and PSY 1271)

The course provides an introduction to the methods of social-psychological research. The purpose of the course is to assist students in de-

veloping the ability to read published social research with a critical eye, to pose questions in a testable manner, to apply experimental methods to social research, and to express themselves in APA-journal style.

PSY 1572 Personality Laboratory 4 Q.H.*

(Prereq. PSY 1212 and PSY 1272)

The course provides an introduction to the methods and areas of personality research. Includes a discussion of problems of measurement, control, and interpretation. Representative published experiments will be examined critically. Students are expected to design, collect data for, assess, and write up several experiments, including one original research project.

PSY 1581 Sensation and Perception Laboratory 4 Q.H.*

(Prereq. PSY 1212 and PSY 1381 or PSY 1382)

Experiments involving precise measurements of both physical and psychophysical phenomena, including auditory function, color vision and after-effects, muscular sensation, tactile sensitivity, and adaptation to perceptual distortions.

Seminars

PSY 1631 Seminar in Behavior Theory 4 Q.H.

Topics vary from term to term. For specific information, call ext. 3076.

PSY 1632 Seminar in Behavior Modification 4 Q.H.

(Prereq. PSY 1531)

Topics in behavior modification are discussed in a seminar format.

PSY 1651 Seminar in Neuropsychology 4 Q.H.

(Prereq. PSY 1351)

For students who desire intensive study, discussion, and practice in laboratory studies of physiological variables. Topics include evolution of the nervous system, sensory and motor mechanisms, motivation and emotion, sleep, attention and perception, learning, and memory.

PSY 1652 Sensory Physiology Seminar 4 Q.H.

(Prereq. PSY 1351)

The course concentrates on the psychophysiology of various sensory systems, vision and hearing in particular. Discussions are concerned with the problem of accounting for sensory phenomena in terms of physiological concepts.

PSY 1661 Seminar in Psycholinguistics 4 Q.H.

(Prereq. PSY 1262 or permission of instructor)

The seminar focuses on the on-line processing of language. Recent research is discussed in light of such questions as: While listening to someone speak, how does the listener process the information carried by the acoustic signal? What is the role of linguistic rules, prediction strategies, and contextual information? And when speaking, what

processing stages are involved from the moment the speaker decides to speak to the moment the articulators start functioning? These and other questions will be discussed, as will experimental techniques and current trends in psycholinguistics.

PSY 1662 Seminar in Cognition 4 Q.H.
Topics vary from term to term. For specific information, call ext. 3076.

PSY 1671 Seminar in Social Psychology 4 Q.H.
(Prereq. PSY 1271 and SOC 1135, or permission of instructor)

Students are expected to examine and present in class their findings on a particular topic in social psychology, for example, attribution, aggression, conformity, attitude-behavior relationship.

PSY 1672 Seminar in Clinical Psychology and Personality 4 Q.H.
(Prereq. PSY 1373 or permission of instructor)

The course offers seminar presentations of topics relevant to understanding the normal and disturbed personality. Possible topics: specialized assessment procedures, cognitive styles in personality, temperament, hypnosis, anxiety, aggression, specialized clinical syndromes, and the development of conscience.

PSY 1681 Seminar in Sensation and Perception 4 Q.H.
(Prereq. Permission of instructor)

Topics in Psychology Series (TIPS)

General interest, no-prerequisite courses in psychology.

PSY 1214 Psychological Testing: Science and Politics 4 Q.H.

After an analysis of the basic principles of psychological test construction and the characteristics of various tests, the course focuses on the political and sociological problems associated with psychological assessment. Emphasis is on the uses and misuses of tests; social, cultural, and racial issues in intelligence testing; and the heredity-environment controversy in I.Q. testing.

PSY 1215 Sexual Behavior 4 Q.H.

This course is concerned with the sexual activities of the human male and female from infancy to adulthood. It considers the importance of sexual factors in the life history of the individual, statistical surveys of sexual behavior, and direct observational measures of sexual responding. Included are the nature of love, responses to pornography, prostitution, bisexuality, male and female homosexuality, rape, child abuse, and sexual therapy.

PSY 1216 Marriage and the Family 4 Q.H.
Problems typical in some marriages are discussed, including alcoholism, sexual inadequacy and dissatisfaction, separation and divorce, death of a spouse, and child rearing.

PSY 1217 Man in Isolation 4 Q.H.
Children raised in the wilds, children isolated in society, and adults placed in experimental isolation are the subjects of this course, designed to reveal what part of human nature actually requires interaction with other human beings, what part is programmed biologically, and how these work together to make us human.

PSY 1263 Body Language 4 Q.H.
This course examines the messages we send by posture, facial expression, gesture, gait, and interpersonal distance. It goes on to explore how power, status, and gender affect nonverbal communication.

PSY 1264 Animal Communication 4 Q.H.
How do animals communicate and how are we attempting to communicate with them? This course examines and compares the communication systems used by animals such as birds, bees, whales, dolphins, and the primates, including chimps and humans. From the four perspectives of biology, linguistics, psychology, and sociology, recent attempts to teach other primates some of our languages (sign language, speech, manipulation of tokens or computers) are revealing what it means to be a human in the animal kingdom.

PSY 1265 Your Memory: How It Works 4 Q.H.
This course provides an analysis of the operation of memory in humans and animals, including factors from learning and physiology. Special attention is given to human verbal and conceptual memory, and classic and modern systems for memory extension and improvement. Practical exercises on methods of remembering are included.

PSY 1274 Psychology and the Law 4 Q.H.
How does psychology enter into the various phases of the judicial process? The class traces the effects of psychological factors through the course of a trial, including such issues as accuracy of eyewitness identification, plea bargaining, jury selection, persuasion tactics in the courtroom, presumption of innocence, jury size, jury decision rules, and sentencing and punishment.

PSY 1281 Magic and Illusion 4 Q.H.
This course investigates visual, auditory, and kinesthetic illusions and constancies, demonstrating the manner in which we can be misled by our perceptions and how professionals, such as magicians (who will demonstrate certain topics), take advantage of this fact.

Anthropology

SOA 1100 Introduction to Anthropology 4 Q.H.
The course provides a survey of basic anthropological concepts, including human evolution, culture, and linguistics, with comparative analysis of such sociocultural institutions as kinship, economy, polity, and religion, especially in non-Western societies.

SOA 1101 Cultural Meaning and Everyday Experience 4 Q.H.
This course uses anthropological ideas to study the underlying patterns of meaning that lie below the surface of everyday thought and behavior. Topics include study of daily routines, leisure activities, joking and humor, speech patterns, current folklore and mythology, nonmonetary economic transactions, kinship and friendship relations, and religion and ritual.

SOA 1102 Evolution and Society 4 Q.H.
This course focuses on human social and cultural evolution and the theories that account for it.

SOA 1103 Culture In Transition 4 Q.H.
The course offers analysis of the changing patterns in social, economic, and political institutions. Modern social trends are discussed.

SOA 1120 Visual Anthropology: Camera on Culture 4 Q.H.
(Prereq. SOA 1100)

This course explores the anthropologist's use of film to gather information and analyze cultural subsystems. In addition to reading about and viewing films on particular peoples, a "laboratory" aspect of the course involving the use of tape and video equipment introduces students to the field.

SOA 1125 Introduction to Archaeology 4 Q.H.
This course offers a survey of the history of development of archaeology focusing intensively on key sites in the new and old worlds. Film and slides of sites and artifacts are used extensively.

SOA 1135 Language and Culture 4 Q.H.
Topics include the function of language in human society and an introduction to the relation between the patterns of language and the patterns of culture.

SOA 1145 Peoples Who Live by the Sea 4 Q.H.
Course material includes examination of fishing, trade, shipbuilding, recreation, smuggling, and other uses of the sea; the social ecology, lifestyles, economics, and politics of seacoast perspectives of evolutionary and community systems theory. Research projects dealing with current issues, site visits, and field trips are required.

SOA 1146 Peasant Society and Culture 4 Q.H.
Focuses on the dilemma of attempts by peasant societies to preserve traditional cultural forms in the face of increasing external economic and

political pressures. Covers the origins of the peasantry, diversity and uniformity in peasant societies, the transformation of peasants into the modern urban and rural poor, and the politics of peasant protest and revolution.

SOA 1155 Individual and Culture 4 Q.H.
This course explores the ways in which individuals are shaped by society and the ways in which they can effect change.

SOA 1160 Sex, Sex Roles, and Family 4 Q.H.
The course analyzes popular and scientific notions about sex and family by examining the social patterning of interactions in our culture, other cultures, and other species. Emphasizes the changing relations between men and women. (See also SOC 1160.)

SOA 1185 Aggression 4 Q.H.
Focuses on concepts of aggression and how they affect our understanding of human society. Draws on materials collected by anthropologists, psychologists, and ethnologists.

SOA 1220 Culture and Mental Illness 4 Q.H.
This course offers discussions and analyses of the nature and meaning of culture, the role of culture in personality formation, culture and anxiety, anthropological approaches to the "normal" and the abnormal, and the question "Is mental illness psychological fact or cultural fiction?"

SOA 1265 Primitive Religion 4 Q.H.
The course focuses on nature and institutionalization of "primitive" religion. Topics include exploration of religious concepts and movements in relation to social, economic, and political organization.

SOA 1266 Folklore 4 Q.H.
This course focuses on cross-cultural comparisons of oral narrative traditions and literary sources. Various methods of analysis of folklore and its place and function in society and culture are examined. Identification of and methods for collecting material from local currently active folklore traditions are given special attention.

SOA 1267 The Anthropological Study of Myth 4 Q.H.
The course focuses on theories concerning the nature and meaning of myth. Exploration of the function of myth in social and cultural change. The structural analysis of myth.

SOA 1275 The Anthropology of Music 4 Q.H.
This course offers an examination of music in a prehistoric and cross-culture perspective, with emphasis on ethnomusicology and the comparison of Western and non-Western musical culture. Functions and social contexts of musical composition and performance; the ethnography of musical performance groups; the analysis of music as a form of communication.

SOA 1300 Cultural Ecology 4 Q.H.

The course offers an introduction to questions of human adaptation to environment and the effect of different adaptations on natural systems.

SOA 1301 Human Origins 4 Q.H.

The course offers an intensive look at the data on fossil remains and contemporary primates, which are essential for an understanding of human physical and behavioral evolution. Efforts are made to bring the student into direct contact with primary materials.

SOA 1310 Social Change and Economic Development 4 Q.H.

Selected topics in the socioeconomic transformation of the world produced by the industrial revolution. Focuses on the impact of the modern world system on traditional cultures and contemporary Third World countries.

SOA 1320 Anthropology Methods 4 Q.H.

The course examines theory and practice of methods of field research and data analysis. Students have the opportunity to take part in a field project.

SOA 1335 Language and Communication 4 Q.H.

The course focuses on human communication, including language, theories of the evolution of language; language and kinesics, semiotics, social class, linguistic nationalism; linguistic problems in modernization.

SOA 1345 Urban Anthropology 4 Q.H.

The course explores selected problems in anthropological studies in urban societies.

SOA 1355 Political Anthropology 4 Q.H.

The course investigates the origin and growth of the institutions of civilization. Topics include specialization and social stratification in the dynamics of traditional civilizations. Some special topics of contact and change.

SOA 1356 The Anthropology of Law and Conflict 4 Q.H.

Topics include settling disputes in stateless societies; forms and mechanisms of social control; law as an indicator of cultural and social norms; the study of conflict resolution as an ethnographic tool. Some field research and analysis are required.

SOA 1360 Economic Anthropology 4 Q.H.

The course examines types of economic systems in simple societies: reciprocal, redistributive, market exchange; economic relations as part of social relations; land-tenure systems, credit systems,

savings mechanisms. The transition from subsistence to cash economics.

SOA 1420 Kinship and Society 4 Q.H.

This is a course for the advanced student only. A variety of kinship systems, their terminological and structural components, and the way in which they articulate with other social institutions are studied.

SOA 1425 Tribal Societies and Cultures 4 Q.H.

The course focuses on the structures and institutions of bands, tribes, and chiefdoms; comparative and functional studies of tribal societies and the dynamics of change under contact situations.

SOA 1430, SOA 1431, SOA 1432, SOA 1433, SOA 1434, SOA 1435, etc. (each) 4 Q.H.

These are ethnographic area courses (New World Indian, African, Chinese, Indian, Mediterranean, etc.) which will be offered as the department's resources permit.

SOA 1470 Religion and Myth 4 Q.H.

Nature and institutionalization of primitive, ancient, and contemporary religions. Exploration of religious concepts and movements in relation to social, religious, and political organization.

SOA 1800, SOA 1801 Directed Study 4 Q.H. (Prereq. Department approval)

The course offers independent work on a chosen topic under the direction of members of the department. Limited to qualified seniors preparing in anthropology with approval of the department chairperson.

SOA 1820, SOA 1821, SOA 1822, SOA 1823 Junior-Senior Honors Program (each) 4 Q.H.

For details contact the Honors Office, 183 Holmes.

SOA 3100 Theory 4 Q.H.

Qualified undergraduates may wish to take this graduate school course. Permission of the instructor is required for registration.

INT 1340 Cultural Aspects of International Business 4 Q.H.

(Prereq. Middler standing)
Using a managerial perspective, this course covers issues that arise when a firm moves from its home country to a host country that may have a different national culture. Although it will usually assume the perspective of the United States-based firm that operates abroad, it will spend some time on what happens to other national firms operating in the United States and in third-country environments. The way in which "corporate culture" evolves, in the context of national culture and the impact on managers, will be a central issue.

Sociology

SOC 1100 Introduction to Sociology 4 Q.H.

The course explores basic concepts and theories concerning the relation between individuals and society. Emphasis on the influence of culture, social structure, and institutions in explaining human activity. Social groups, socialization, community, class, power, and social change, among other substantive issues, will be discussed and analyzed.

SOC 1101 The Sociology of Everyday Life 4 Q.H.

The course examines the development, application, and consequences of rules for everyday activities (e.g., walking, talking, eating, drinking, sitting, smoking, laughing, crying, and sleeping); the effects of artifacts, culture, space, and territory on these activities, on social life, and on the expression of emotions.

SOC 1102 Social Inequality and Communication 4 Q.H.

The course provides an analysis of the ways in which groups and institutions, in both their ritual and everyday activities, communicate the idea of hierarchy and an individual's place in it through face-to-face interaction, formal communication, and the use of space and time. A dramaturgical approach to social organization with special emphasis on status images in the media and the communication of social place by service organizations and professional groups. Includes some content analysis and observational fieldwork.

SOC 1103 American Society 4 Q.H. (Prereq. SOC 1100 or equiv.)

The course focuses on American society, culture, and major social institutions: economic, religious, governmental, familial, educational, welfare, and recreational; social classes and stratification, mobility, and individualism.

SOC 1104 Contemporary Japanese Culture and Society 4 Q.H.

Focus on contemporary Japanese urban society. Topics include: major values, family structure, sex roles, social control, the economy and the division of labor, mass media, religion, arts, and social problems.

SOC 1120 Sociology of Boston 4 Q.H. (Does not meet elective requirement for sociology/anthropology major)

The course examines the city of Boston from the perspectives of environmental development, neighborhood and intergroup relations, institutional services, and symbolic meanings. The city is a laboratory for exploring people's search for a lifestyle and the satisfaction of their needs. Field trips with workbook are required. Documentary and literary sources for term paper report are used.

SOC 1121 Doing Sociology 4 Q.H.

A research approach to sociology. Focus on students' participation in their own learning about sociology as a body of knowledge and as a method of studying social life. Students will use the computer during the course.[†]

SOC 1125 Social Problems 4 Q.H. (Prereq. SOC 1100 or permission of instructor)

The course offers analysis of five major sociological perspectives on social problems (pathology, disorganization, value conflict, deviance, and labeling); the conditions under which certain recurrent events, activities, and persons become redefined as social problems (e.g., mine disasters, marijuana smoking, and alcoholism); study of the typical responses to social problems and their consequences.

SOC 1135 Social Psychology 4 Q.H. (Prereq. SOC 1100 or permission of instructor)

The course offers a sociopsychological approach to individual behavior in social contexts; introduction to basic concepts, such as socialization, identity, self-concept, role conflict, attitudes and attitude measurement, and groups and group processes as well as an overview of major theoretical orientations and important substantive topics.

SOC 1140 Sociology of Prejudice 4 Q.H. (Prereq. SOC 1100 or permission of instructor)

This course examines factors in the development and maintenance of prejudice and discrimination. Topics include American race relations, anti-Semitism, sex roles, and stereotyping.

SOC 1145 Population and Society 4 Q.H.

The course examines traditional and contemporary approaches to human population and its control. Topics include factors affecting birth and death rates; societal implications of population quantity and quality in several situations, past and present; rural-urban migration and mobility; racial, genetic, stratificational components for population analysis. Public policies and responses to fertility control in several societies. International efforts to understand and generate action on population issues.

SOC 1146 Environment and Society 4 Q.H.

This course examines the complex relations between human populations and their environments. Issues such as energy, pollution, food supplies, resource availability, and conservation are treated as societal phenomena that involve human values and decision-making processes as well as technical information from a variety of scientific fields. The course will include practical experience in environmental problem solving.

[†]Satisfies Core Curriculum Category II requirement.

SOC 1147 Cities and Society**4 Q.H.**

(Formerly Urban Society)

Topics include the foundations of urban life in historical perspective; relation of city life to environment, population, social organization, technology and cultural values; growth trends, urbanization, urban planning, and citizen action.

SOC 1155 Sociology of the Family**4 Q.H.**

Topics include the family as a social institution in several selected cultures; interrelations of the family and political, economic, and educational institutions; social nature of personality; role taking; individualism, mobility, and industrialism.

SOC 1156 Violence in the Family**4 Q.H.**

The course offers an examination of the physical, emotional, and sexual violence that occurs in families, with particular emphasis on child and spouse abuse. Definitions, prevalence, causes, prevention, and treatment of specific cases of domestic violence are analyzed. Social policy issues and problems of legal intervention are a primary focus.

SOC 1160 Sex-Gender Roles in a Changing Society**4 Q.H.**

The course offers review and application of theories about the determinants of sex statuses and roles, from historical and cross-cultural perspectives. The focus of the course is on women's status in different institutional structures of American society.

SOC 1165 Students, Schools, and Society**4 Q.H.**

(Prereq. SOC 1100)

This course emphasizes the role of education in processes of socialization, social mobility, social control, and social change. Do social characteristics (sex, race, class, age, physical status) influence the school experience? Do schools provide opportunity and initiate change, or do they perpetuate the status quo in economic, political, and social life? Who goes to school, where, for how long, and with what result? How does educational advantage or disadvantage get translated into jobs and social status? Students are encouraged to draw on their own experiences to develop paper topics.

SOC 1170 Race and Ethnic Relations**4 Q.H.**

(Prereq. SOC 1100 or equiv.)

The course focuses on racial and religious groups, particularly with reference to the United States; special emphasis on historical development, specific problems of adjustment and assimilation, and specific present-day problems and trends.

SOC 1171 Race and Ethnic Relations: A World Perspective**4 Q.H.**

(Formerly Comparative Race/Ethnic Relations)

This course offers a cross-cultural analysis of race and ethnic relations in Western and non-Western societies. Explanations of race and ethnic rela-

tions in terms of contemporary developments, world problems, and ideological conflicts are included.

SOC 1175 Sociology of Work**4 Q.H.**

This course examines the varieties of work in American society, from blue collar to managerial and professional occupations. Topics include job dissatisfaction and professional burnout, changing shape of the labor market, women and work, participation and humanization of work, the impact of computers.

SOC 1176 Sociology of Business/Industry**4 Q.H.**

The course focuses on the role of industry in modern society; similarities and dissimilarities among industrial societies, bureaucracy and its alternatives, unions, supervision democracy and manipulation, the worker on the assembly line, sabotage of the organization, and the role of wages and alienation.

SOC 1177 Social Roles in the Business World**4 Q.H.**

The course offers an analysis of the social structure of corporate and business life in contemporary America. Case studies from major accounting and/or industrial firms are presented and discussed. The "career line" in the world of business and management will be examined with a special focus on age/sex, racial/ethnic, and class/income barriers.

SOC 1178 Women Working**4 Q.H.**

Differences in the labor force experience of men and women workers generally go unrecognized, and the work experience most common to women—household work—is rarely analyzed. This course will cover women's market and non-market activities, their rewards, and their problems, in addition to empirical and theoretical analyses of the work roles of women. Overall, the course will underscore the differences between work experiences of men and women.

SOC 1180 Sociological Perspectives on Consumerism and Consumer Behavior**4 Q.H.**

The course offers an analysis of consumer-oriented issues, including interest groups, needs, values, institutional networks, decision-making processes, and situational impacts. Exploration of systemic benefits and costs of consumer-relevant actions.

SOC 1185 The Sociology of Deviance**4 Q.H.**

(Formerly Social Deviance)

The course explores the conditions under which people categorize others as different; processes by which persons so defined are assigned deviant status and assume appropriate roles and self-images; development of deviant careers and their relation to deviant subcultures; situations in which people transform deviant identity.

SOC 1186 Social Control I 4 Q.H.

The course examines formation of social bonds and the conditions under which they are ruptured; the emergence of deviance as an interactional problem; individual and societal reactions to the most prevalent forms of deviant behavior. Analysis of agencies of social control, their definitions of problems, and responses to typical clients.

SOC 1190 Juvenile Delinquency 4 Q.H.

The course examines the sociological and psychological approaches to and their implications for a typology of delinquency; problems of prevention, treatment, and rehabilitation.

SOC 1195 Drugs and Society 4 Q.H.

The course offers an introduction to the sociology of drugs. The course first examines social definitions of drugs, conditions of their use, and socialization into drug use. It then considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs will be considered, but major emphasis will be given to alcohol, marijuana, and heroin.

SOC 1200 Sociology of Alcoholism 4 Q.H.

The course focuses on social responses to deviant alcohol use. The course examines, in sequence, drinking cultures and drinking practices in the United States; processes by which people are labeled "alcoholics"; and the role of agencies of social control, such as the criminal justice system and the health care system, in labeling and in rehabilitation.

SOC 1201 Alcohol Use and Social Control 4 Q.H.

All societies define and enforce rules on the use of alcohol. This course examines the conditions under which alcohol use disrupts social life; the processes through which alcohol controls, informal and formal, come into being; the development changes and consequences of these controls. Case studies of Prohibition, regulation of the alcohol beverage industry, legal drinking age, drinking and driving, and public drunkenness will be included.

SOC 1205 Law, Crime, and Social Justice 4 Q.H.

Analysis of the impact of the legal system on the creation and perpetuation of criminality in contemporary American society. Particular attention is devoted to the study of the creation of criminal law, the judicial process, and the role of law in the gap between crime and social justice. Field trips will focus on criminal arrangements, trials, and sentencing in the Boston Municipal Court and Suffolk Superior Court. Suitable for students in pre-law, criminal justice, political science, and allied fields.

SOC 1206 Class, Crime, and the Police 4 Q.H.

This course summarizes the major psychological, social, biological, economic, and political theories

about the cause of crime. It then applies these theories to the day-to-day operations of the police, courts, and prison system in the United States. Various attempts to lower the crime rate through such policies as "scared straight" programs, the death penalty, stricter and looser prisons, increased police presence, and behavioral conditioning will be examined.

SOC 1215 Medical Sociology 4 Q.H.

(Prereq. SOC 1100 or permission of instructor)
The course provides an examination of the professions, training, institutions, and problems in health care, with an emphasis on those in the United States. Practical issues in the improvement of health care systems are considered.

SOC 1216 Health Care as a Social Issue 4 Q.H.

(Prereq. SOC 1100 or permission of instructor)
The course explores the social and political dynamics of health care: who benefits from the system and defends it, who works for change, who wins and why. Topics include the social history of health care, occupational politics, community power structure and the health care setting, the planning and delivery of health services to "haves" and "have-nots," and the role of citizens in determining the future of health care through activism, lobbying, legislation, and participation in controlling the system. Case examples will be provided.

SOC 1220 Sociology of Mental Health 4 Q.H.

(Prereq. SOC 1100 or equiv.)
The course provides a survey of sociological perspectives on mental health and mental disorder. Discussions, readings, and presentations explore the social history of mental illness, epidemiology, cross-cultural perspectives, patients' careers, social institutions of treatment, and policy implications. Areas of convergence between sociological concepts and psychiatry are examined.

SOC 1225 Aging and Society 4 Q.H.

The course offers a survey of issues and questions on aging, with special attention to social and economic consequences of the aging process, including retirement and productivity, health care problems, nursing home residences, widower and widowhood, and the approach of death. Examples relating to aging in other cultures are presented in a search for new answers to social problems of aging in the United States. Students have the opportunity to learn to anticipate, cope with, and even prevent problems of aging that concern self, family, and clients/patients.

SOC 1235 Death and Dying 4 Q.H.

(Prereq. SOC 1100 or permission of instructor)
The course focuses on the treatment of death and dying, including problems faced by health care professionals, family members, institutions, the funeral industry, and the dying themselves. The course will discuss cross-cultural perspectives,

the social distribution of mortality, the changing nature of death, and the ethical problems in determining life and death with particular attention to such issues as abortion, suicide, and ceasing medical intervention.

SOC 1240 Sociology of Human Service Organizations

4 Q.H.

If human service organizations are to deal with society's problems they must address organizational problems and maximize efficiency and effectiveness. This course examines the principles of informed management and organizational problem solving in a variety of human service settings, social service agencies, hospitals, government bureaucracies, and schools. Topics include theories of organizational behavior and structure, decision making, leadership and authority, goal analysis, and work and satisfaction.

SOC 1245 Sociology of Poverty

4 Q.H.

The course offers an analysis of American poverty in historical perspective, drawing on comparisons with other countries. Critical evaluation of sociological research and theories relating to poverty. Consideration of causes and effects of poverty, as well as societal responses to poverty and its consequences. Suitable for students in applied fields, such as nursing, criminal justice, education, allied health, premed, and prelaw.

SOC 1247 Food and Hunger

4 Q.H.

Systematic examination of the social causes and consequences of hunger, and alternative approaches to solving world hunger.

SOC 1250 The Sociology of Private and Public Assistance

4 Q.H.

The course offers analysis of the functions of society's private and public assistance efforts. The sociopolitical, economic, and psychological factors in public welfare and the helping professions.

SOC 1255 Leisure, Sport, and Society

4 Q.H.

The course provides an analysis of the social origins and functions of leisure activities, with special emphasis on games and sports as forms of leisure. Considerable emphasis is given to cross-cultural and historical analysis as well as to the relation between leisure activities and various social institutions—economy, polity, family, and religion.

SOC 1275 Sociology of the Arts

4 Q.H.

The course offers an examination of the relation between the social organization of society and the forms of art produced—the social role of the artist, how the arts are "manufactured" and distributed, the art consumer's relation to art and the artist, social support for the arts. The course deals with a variety of art forms, with emphasis on the performing arts.

SOC 1276 Sociology of Popular Culture

4 Q.H.

A sociological analysis of popular culture, focusing on the relationship between pop culture and

social institutions such as religion, the law, education, the economy, and the family; the organizations and artistic communities that produce pop culture such as the music industry, theatrical groups, advertising agencies; and the social roles and socialization processes associated with individual artists. Changes in popular culture are examined from the viewpoint of changes in the larger society.

SOC 1285 Technology and Society

4 Q.H.

Does society control technology or is technology directing society? Has technology become dehumanized? How valid is the doctrine of technological inevitability? Can the technological "fix" be viewed as a solution to social problems? Is technology itself a social problem? What can be expected of technology assessment? What of the back-to-nature and antitechnology movements today: are they the waves of the future? These are some of the questions and issues that are discussed and analyzed. Students are expected to do considerable independent study and research.

SOC 1286 Science and Society

4 Q.H.

Science has had profound effects on our society, and scientists have seen the ways in which political, economic, and social forces have guided developments in their fields. Issues such as "responsibility" and "autonomy" created by this interdependence will be explored. Emphasis is on the social structures within which science operates and is communicated, and on science as an occupation and profession, as well as a system of thought and set of tools for producing knowledge.

SOC 1290 Military and American Society in a Nuclear Age

4 Q.H.

Keeping out of war, winning war, and keeping peace have been major concerns during the past forty-five years. In this course, we will investigate the relationship between military and society. Selected issues will include: 1) an analysis of the impact of the military on social institutions such as the family, polity, and economy; 2) an examination of the arms race and upheaval in social life; 3) the legitimization crisis of the U.S. military; 4) the role of women and minorities as reserve armies; and 5) military spending and domestic social problems.

SOC 1300 Classical Social Thought

4 Q.H.

(Prereq. Three sociology/anthropology courses) The course examines the development of sociology from the history of social thought. The emergence of several schools, beginning with positivistic organicism and conflict theory.

SOC 1301 Current Social Thought

4 Q.H.

(Prereq. Three sociology/anthropology courses) A seminar-lecture course in which formalism, social behaviorism, social action theory, and functionalism are studied critically.

SOC 1302 Female Perspectives on Society**4 Q.H.**

(Formerly Feminist Perspectives on Society)

This course examines a sampling of the burgeoning feminist literature in the social sciences and in theory, focusing on at least three major tendencies in this literature: radical feminism, socialist feminism, and neo-Freudian feminism. Specific topics include the origins and/or universality of women's oppression; women's work under capitalism; socialism and women's liberation; and family structure and the reproduction of gender.

SOC 1310 Class, Power, and Social Change**4 Q.H.**

(Prereq. SOC 1100 and junior or senior standing in sociology/anthropology or permission of instructor)

The course focuses on theories of social equality and inequality as applied to the exercise of power and the growth and development of social movements and group conflict as seen from the point of view of large-scale social change. Required of majors.

SOC 1320 Introduction to Statistical Analysis**4 Q.H.**

(Prereq. SOC 1100 or permission of instructor)

This course examines the application to social data of the principles of measurement, probability, measures of centrality, tests of significance, and techniques of association and correlation.

SOC 1321 Research Methods I**4 Q.H.**

(Prereq. SOC 1100 and SOC 1320, or permission of instructor)

This course introduces students to the research process through an examination of the rules of evidence in empirical research and the place of values. Students have the opportunity to learn how to design and critique types of sociological research, how to collect qualitative and quantitative data, and how to sample populations.

SOC 1322 Research Methods II**4 Q.H.**

(Prereq. SOC 1100, SOC 1320, and SOC 1321, or permission of instructor)

Students are required to complete the research project begun in Research Methods I; practice coding, building indexes, scaling, table construction; introduction to use of the computer.

SOC 1323 Qualitative Research Methods**4 Q.H.**

The course offers an introduction to sociological fieldwork—methods of gathering data by extended observation of and interaction with people in natural settings. Students will take part in a series of observations designed to teach the basic skills of open-ended interviewing, observing, recording, and analyzing data. The theoretical base will be symbolic interaction.

SOC 1324 Human Services Research and Evaluation**4 Q.H.**

(Prereq. SOC 1320 or other statistics, SOC 1240, or permission of instructor)

This course covers basic issues in applied research and the evaluation of services, including attention to the purposes of evaluation, ethics, formulating questions and measuring answers, designing evaluations and planning oriented research, utilizing evaluation results, and the turbulent setting of action programs. Suitable for students majoring in human services, sociology, psychology, nursing, health education, and related fields.

SOC 1335, SOC 1336 Group Behavior I and II**8 Q.H.**

(Formerly: Group Behavior—The Sociological Imagination)

The course explores how individuals interact in groups and how groups interact with each other. The reflexive self, social aspects of language, situational learning, group perspectives, careers, institutions, and worlds.

SOC 1337 Seminar in Social Psychology**4 Q.H.**

Focus is on the interaction of psychological and group processes. Students are required to read original theoretical and research monographs in the field. Topics may include prejudice, reference groups, sex roles, conformity, leadership, aggression, communication, collective behavior, and achievement.

SOC 1345 American Demographics**4 Q.H.**

This course is essentially an applied research experience in which students have the opportunity to study the major areas of demography. The focus of the course is on the resources of the U.S. Census Bureau and, in particular, the data products available from recent census surveys.

SOC 1346 Suburb and Metropolis**4 Q.H.**

(Prereq. SOC 1100 or equiv.)

The course explores ecology of suburban and metropolitan growth, impact on center city and rural fringe, emergent life styles and institutional forms. Compares interdependence, issues of identity, autonomy, and accessibility. Analysis of different types of metropolitan political, social, and economic institutions. Prospects for regional action.

SOC 1347 Community Analysis**4 Q.H.**

(Prereq. Permission of instructor or three sociology/anthropology courses)

This course explores types of human settlements, focusing on the interaction between people and their political, economic, and social environments. Topics include power structure and citizen action to influence institutions; skills in commu-

nity analysis, including use of documents, survey, observation, and evaluation of needs and resources; strategies of conflict, cooperation, and negotiation to attain community and group ends.

SOC 1348 Seminar in Urban Studies 4 Q.H.
(Prereq. SOC 1147 or permission of instructor)

Interdisciplinary approaches to urban studies are compared according to problem areas and research methods. Students have the opportunity to extend previous term paper projects after exposure to social action and social systemic theoretical perspectives.

SOC 1355 Political Sociology: Who Gets What 4 Q.H.
(Prereq. Permission of instructor or four sociology/anthropology courses)

This course offers an examination of formal political structures and informal quasi-political groups. Topics include sociological analysis of ideology, class politics, mass movements, and the conflict of various social and economic groups as they vie for political power and influence.

SOC 1360 Social Stratification: Class, Status, and Power 4 Q.H.
(Prereq. Permission of instructor or four sociology/anthropology courses)

Topics include theories of social inequality, concepts of social class, aspects of status and role difference, criteria for social mobility.

SOC 1365 Collective Behavior 4 Q.H.

Topics include the rise of new group forms in response to persistent social unrest; study of masses, crowds, and publics; analysis of specific instances of collective behavior such as race riots, wildcat strikes, prison revolts, and campus disorders.

SOC 1375 Sociology of Occupations and Professions 4 Q.H.
(Prereq. Permission of instructor or four sociology/anthropology courses)

Topics include the meanings of work; division of labor and specialization; analysis of occupational structure and patterns of recruitment, training, and career preferences; the classic professions and new trends in professionalization.

SOC 1376 Organizations and Bureaucracy 4 Q.H.
(Formerly Administration and Formal Organizations: People, Machines, and Bureaucracies)

This course examines the theory of formal organization and the processes of organizational power and change in a variety of settings: industry, federal government, military, unions, coops, social services. We will look at the influence of bureaucracy in American society, and how people creatively respond to, change, and democratize large organizations.

SOC 1385 Social Deviance II 4 Q.H.

The course offers an examination of the leading theories of deviance (anomie, subcultural deviance, labeling) and their principal variants; study of their assumptions, conceptions, propositions, and supportive evidence; analysis of empirical studies in each theoretical tradition.

SOC 1405 Sociological Theories of Crime 4 Q.H.

The course explores patterns and social forces involved in criminal behavior. Analysis of sociological theories of criminality and comparison of these with other explanations of crime.

SOC 1470 Sociology of Religion 4 Q.H.
(Prereq. SOC 1100)

The course offers a comparative and analytic treatment of religion as a social institution, focusing on the relations between religious organizations and other social institutions, with particular emphasis on the American experience. Religion as an agent of social change and stability is included.

SOC 1475 The Sociology of Mass Communication 4 Q.H.
(Formerly Mass Communication and Public Opinion)

Topics include factors in the formation and development of public opinion, the effect of television on children, mass communication as social organization, media-depicted images of society, the role of personal influence, the process of rumor, the use of mass media by the poor, propaganda analysis, and the latent and manifest functions of mass communication.

SOC 1485 Computers and Society 4 Q.H.
(Prereq. Ability to program a computer)

Examines the impact of the computer "revolution" on the conditions of work and life in contemporary society and on legal and theoretical conceptions of human society and consciousness.

SOC 1500 Applied Sociology: Practice and Theory 4 Q.H.

The course provides an analysis of the conditions under which sociological knowledge is applied to social problems, the kinds of problems, and the degree of effectiveness of this application. Particular attention is paid to research and demonstration projects that derive from sociological theory.

SOC 1501 Social Policy and Social Intervention 4 Q.H.
(Formerly Social Control II)

The course focuses on study of the formation of social policies in response to social problems, analysis of policies and problems, supporters and opponents of policy change, conditions under which control agencies adopt new policies, and effects of policy change. Particular emphasis on case studies of social action and legal change.

SOC 1525 Comparative Human Services I**6 Q.H.**

This course offers an intensive look at the American human services system. The course is designed to afford upper-level undergraduate and graduate students the opportunity to study the origins, development, and present state of human services in the United States. The course involves lectures as well as field visits in the Boston area. In addition to the normal classroom activities, independent study is provided.

SOC 1526 Comparative Human Services II**6 Q.H.**

This course offers an intensive study of the British human services system. This course provides students the opportunity to immerse themselves in the social and cultural context of British human services and involves field trips in London designed to examine firsthand the planning, administration, and delivery of human services in Great Britain.

SOC 1535 Seminar in Social Welfare**4 Q.H.**

Discussion of problems in social welfare observed in the term between "Problems" and "Practicum." A research paper, based on directed fieldwork in the intervening term, is the major course requirement.

SOC 1600 Senior Seminar**4 Q.H.**

(Prereq. Senior standing in sociology/anthropology or permission of instructor)

The course provides the opportunity to analyze, from sociological perspectives, student experience in work and voluntary service and to develop and extend research interests related to that work or action experience.

SOC 1601 Seminar in Current Emphases in Sociology**4 Q.H.**

(Prereq. Junior or senior standing in sociology/anthropology or permission of instructor)

This course offers review and discussion of selected sociological topics.

SOC 1602 Seminar in Current Emphases in Sociology: Writing and Talking in Sociology**4 Q.H.**

(Prereq. Junior or senior standing in sociology/anthropology or permission of instructor)

The class considers prevailing modes of presentation in major journals and verbal presentation in teaching, consulting, etc. Class members are required to submit examples of their own writing for analysis.

SOC 1800, SOC 1801, SOC 1802, SOC**1803 Directed Study****(each) 4 Q.H.**

(Prereq. Junior or senior standing in sociology or permission of instructor)

The course offers independent work on a chosen topic under the direction of members of the de-

partment. Limited to qualified students with approval of department chairperson.

SOC 1821, SOC 1822, SOC 1823, SOC 1824**Junior-Senior Honors Program****(each) 4 Q.H.**

For details contact the Honors Office, 183 Holmes.

INT 1150 Introduction to Women's Studies:**Image, Myth, and Reality****4 Q.H.**

This is an introductory survey of the issues and methodology involved in the interdisciplinary study of women. Such a survey encompasses the historical, political, economic, and social processes that have created both the image and the reality of women in society. Guest lecturers provide an overview of the many different disciplinary approaches to the study of women. This course is required for women's studies minors and may be used either as a general elective or, depending upon the discipline of the coordinator, to satisfy specific concentration requirements.*

*Satisfies Core Curriculum Category II requirement.

INT 1201 An Analysis of American Racism**4 Q.H.**

This seminar in contemporary aspects of racism in America discusses the cycle by which racism in our institutions helps form our attitudes and the manner in which our attitudes, in turn, shape our institutions. Emphasis is on the practical, day-to-day aspects of racism, rather than the theoretical and historical.

INT 1215 Into the Ocean World**4 Q.H.**

This course is a comprehensive interdisciplinary introduction to the oceans. The seas' complexity and the far-reaching consequences of our interactions with them demand an awareness of the many facets of marine study. The teaching team consists of specialists in the sciences, social sciences, humanities, and arts, each with an interest in marine issues and a commitment to bridging the gaps among disciplines. The course themes are as broad as the oceans, but, when appropriate, we will focus on Boston harbor, a first step into the ocean world for those of us in this area.

INT 1400 Professional Practices: Individual & Social Dimensions**4 Q.H.**

The course explores the dimensions and dilemmas of freedom and responsibility confronting professional people practicing within limits set by socioeconomic conditions, by clients, and by other professionals. Case histories are examined to illustrate the dilemmas professionals face, the choices that are typically made, and the consequences these have on the freedom of the practitioner, and on personal and professional integrity.

*Satisfies Core Curriculum Category II requirement.

INT 1401 Health Professions: Past, Present, and Future 4 Q.H.

This course focuses on social history of the modern health professions. The course explores long-range patterns in the organization and regulation of the health professions, beginning with the Middle Ages and emphasizing the Jacksonian period,

industrialization, modern professional organizations, the growing role of the state, responses of the health professions, and the future of health care in the United States under various corporate/government schemes for reorganization and "accountability."

Speech Communication

SPC 1102 Effective Speaking 3 Q.H.

(Prereq. Industrial engineering students only; speech communication for specific purposes)

Designed to help provide the student with a basic understanding of the communication process and its function as a means of relating to the world, ourselves, and other people, the course examines factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

SPC 1106 Speech Fundamentals 3 Q.H.

(Prereq. Recreation majors only; speech communication for specific purposes)

This course is designed to give the student an opportunity to develop a basic understanding of the communication process and its function as a means of relating to the world, ourselves, and other people. It examines factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

SPC 1109 Effective Speaking Workshop 2 Q.H.

(Prereq. Civil engineering students only)

This course is designed to give the student an opportunity to acquire a basic understanding of the communication process and its function as a means of relating to the world, ourselves, and other people. It examines factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

SPC 1110 Voice and Articulation 4 Q.H.

The course includes the study of voice technique: emphasis on pitch, projection, articulation, and vocal variety. A combination of theory and practical application.

SPC 1111 Oral Interpretation 4 Q.H.

The course focuses on application of basic vocal techniques to the dramatic reading of prose, poetry, and drama. Through literary analysis the author's meaning is understood and, by means of oral reading skills, communicated to an audience.

SPC 1115 Introduction to Communication Skills 4 Q.H.

This course is designed to give the student an opportunity to develop a basic understanding of the communication process and its function as a

means of relating to the world, ourselves, and other people. It examines factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

SPC 1116 Business and Professional Speaking 4 Q.H.

The course focuses on practice of oral presentations, group communication, conference and discussion techniques, interview methods, and occasion speaking. The course combines performance aspects with case study methods of communication on the professional level.

SPC 1210 Advanced Vocal Techniques 4 Q.H.

(Prereq. SPC 1110 or permission of instructor)

Development and application of vocal techniques acquired in SPC 1110. Emphasis on vocal analysis, flexibility, and regional patterns of speech.

SPC 1211 Advanced Oral Interpretation 4 Q.H.

(Prereq. SPC 1111)

Opportunity to develop further oral reading skills acquired in SPC 1111. In addition, the course includes work with accents and dialects, study of reader's theatre, and an investigation of classical and modern philosophies of the art.

SPC 1232 Female/Male Communication 4 Q.H.

The course surveys the various dimensions of female-male relations as they are created, sustained, or disintegrated through communication transactions. Emphasis will be on the various images and stereotypes of male and female sexual identity as they affect and are affected by communication in the development of hostility, friendship, or intimacy. Temporary, permanent, and destructive female-male relations will be examined as they lead to alternate life-styles.

SPC 1239 Argumentation and Debate 4 Q.H.

An applied course designed to help develop skills in rational decision making through advocacy. Attention is given to logical reasoning, psychological methods, and motivational techniques.

SPC 1250 Introduction to Mass Communication 4 Q.H.

This is an introductory course designed to explore the many media through which people express themselves: radio, television, film, print, music. Attention is paid to the role of the individual as a media consumer.

SPC 1300 Introduction to Communication Theory**4 Q.H.**

This course is designed to offer basic knowledge and understanding of the processes involved in the transference of meanings. From the problems involved in defining communication, through a discussion of the nature of communication, various models of communication are examined. The nature of theory and requirements of adequate theory are discussed, leading to an examination of various theories of human communication, including psychological, sociological, information, and system theories.

SPC 1310 Rhetorical Theory I**4 Q.H.**

(Prereq. SPC 1115, SPC 1250)

This course examines various theories of rhetoric, starting with the early Greeks (Plato's "Phaedrus" and "Gorgias," Aristotle's "The Rhetoric"), progressing through the rhetoric of Rome (Cicero's "de Brute" and Quintilian's "de Institutione"), and moving into a brief synopsis of medieval rhetoricians (Peter Ramus, Thomas Wilson, Thomas de Quincey, Francis Bacon, George Campbell, Richard Whately). The focus will be the student's growing knowledge and appreciation of the history and principles of rhetoric, which is the foundation of oral discourse.

SPC 1315 Theories of Persuasion**4 Q.H.**

The course surveys theoretical and conceptual approaches and research pertaining to the effectiveness of communication that is intended deliberately to induce changes in attitudes, beliefs, values, and/or behavior.

SPC 1317 Theories of Audience Behavior**4 Q.H.**

Surveying theoretical models, concepts, and research, the course focuses on the role of the receiver as an active participant in the communication process. Topics include individual information processing; listening as a learned behavior; intra-audience effects; relations between media and audience characteristics; dissemination, rumors, and information; and the development of societal norms and mores.

SPC 1318 Negotiation Skills**4 Q.H.**

(Prereq. Middled standing or higher, or permission of instructor)

The skills involved in bringing matters to mutually acceptable settlements will be investigated and applied through lectures, discussions, and especially through performance in case studies and role-playing simulations. Classroom activities will include such personal, professional, and governmental processes as conflict resolution, problem solving, and advocacy. Particular emphasis will be placed on the collective bargaining process in the private and public sectors, including negotiation, mediation, and arbitration.

SPC 1330 Interpersonal Communication I**4 Q.H.**

This is a conceptual, theoretical course designed to help increase awareness of the communication process. The course provides an examination of the ways in which we relate to other individuals and factors that influence these processes.

SPC 1331 Interpersonal Communication II**4 Q.H.**

(Prereq. SPC 1330 or permission of instructor)

The course focuses on application of concepts developed in interpersonal Communication I. It is an experiential course, exploring ways of becoming more aware of one's self and one's relationships with others and offering an examination of various options for communicating and increasing knowledge of the group process. Enrollment limited.

SPC 1338 Group Discussion**4 Q.H.**

Working in task groups, students are expected to explore theory and research in the area of group dynamics and to apply their knowledge to the classroom experience as they work on developing skills in decision making, problem solving, membership, and leadership.

SPC 1410 Contemporary Public Address**4 Q.H.**

The course offers a critical study of the public address of leading contemporary speakers representative of important political and social movements. This course seeks to help the student gain an appreciation of the dimensions and varieties of contemporary public address, broadly defined as symbolic discourse. From an understanding of various theories and approaches to public address, rhetorical situations are examined; the use of agitative and control strategies to accomplish social change is critically evaluated.

SPC 1415 Persuasive Techniques**4 Q.H.**

(Prereq. SPC 1315 or permission of instructor)

The course offers a critical, in-depth analysis of instances of persuasion as they occur in social interaction, social movements, politics, and advertising; identification of practical strategies employed; and the factors that influence the effectiveness of those strategies when persuaders attempt to influence others.

SPC 1430 Organizational Communication**4 Q.H.**

(Prereq. SPC 1250)

Organizational Communication examines the nature of communication in the context of complex organizations. The student will explore both internal and external organizational communication. Analysis of organizational communication will include: (a) communication networks, (b) communication technologies, (c) interpersonal communication modes, and (d) organizational interdependencies and their effect on information

transfer and diffusion. Will include a section on organizational communication assessment and communication program implementation.

SPC 1437 Consultation Skills 4 Q.H.
(Prereq. SPC 1300, SPC 1115, SPC 1330, and SPC 1338)

The course gives students the opportunity to acquire the skills necessary for analyzing communication difficulties in industry, organizations, and groups. Includes theory discussion, practice, and feedback, using case study method.

SPC 1450 Broadcast Production 4 Q.H.
(Prereq. SPC 1250 or permission of instructor)

The course introduces the student to the equipment of a broadcast studio, surveys broadcast production techniques, and provides opportunities in class for applied practice through the production of programming suitable for broadcast.

SPC 1452 Producing and Directing for Radio 4 Q.H.

(Prereq. Permission of instructor)

The course centers around the role of the producer/director in the creation, preproduction planning, and execution of local and network radio programs. Emphasis is on live broadcasts and live assembly of partially prerecorded programs. A great deal of time will be spent on the written materials necessary for program planning. The class will spend some time in the studio working on model program production and, possibly, actual live music performance broadcasts.

SPC 1500 Special Topics in Speech Communication 4 Q.H.

(Prereq. Permission of instructor)

The course provides an in-depth examination of a subject of particular significance to the field.

SPC 1554 Special Topics in Broadcasting 4 Q.H.

(Prereq. SPC 1250 or permission of instructor)

This course introduces the student to the variety of roles played by broadcast professionals and to the interplay of professional functions integral to the broadcast industry. The focus is on a different aspect of the broadcast industry each term.

SPC 1600 Introduction to Communication Research 4 Q.H.

(Prereq. SPC 1300 or permission of instructor)

The course provides an introduction to scientific method and epistemology as it applies to the in-

vestigation of communication phenomena. The course is structured to assist students in finding and critically evaluating literature dealing with factors that influence the effectiveness of communication and that may be pertinent to either academic projects or managerial decision making.

SPC 1610 Rhetorical Criticism 4 Q.H.
(Prereq. SPC 1310)

This course focuses on the principles of rhetorical analysis: theories, methods, and the application of these to discourses. Various types of discourse will be studied throughout the quarter. Attention will be given to understanding various methods and problems in rhetorical analysis. Judgment criteria, as well as the role of rhetorical criticism in society, will be examined.

SPC 1890; SPC 1891 Directed Study (each) 4 Q.H.

SPC 1895 Internship in Speech Communication 4 Q.H.

This course provides a student with the opportunity to gain academic credit for on-the-job training in an allied career field. Enrollment requires prior approval by a department committee, demonstration that the job allows opportunities to apply theoretical understanding to specific application in the work environment, and faculty advisement as well as on-the-job supervision.

INT 1400 Professional Practices: Individual and Social Dimensions 4 Q.H.

The course explores the dimensions and dilemmas of freedom and responsibility confronting professional people practicing within limits set by socioeconomic conditions, by clients, and by other professionals. Case histories are examined to illustrate the dilemmas professionals face, the choices that are typically made, and the consequences these have on the freedom of the practitioner and on personal and professional integrity.

INT 1500 Introduction to Women Studies: Image, Myth, and Reality 4 Q.H.

This introductory course in the study of women in society encompasses the historical, political, economic, and social processes that have created both the image and the reality of women in contemporary society. An overview of the many different disciplinary approaches to the study of women.

Accounting

ACC 1111 Accounting Principles I 4 Q.H.

This first of a series of accounting courses assumes students do not possess knowledge of the subject. Both this course and ACC 1112 are designed to help provide an understanding of accounting issues and objectives for proper inter-

pretation and analysis of financial data. Specific topics covered in this first course are: 1) the nature, function, and environment of accounting; 2) the basic accounting model; 3) financial and analytical ratios; 4) the accounting cycle; 5) accounting for merchandising entities; and 6) the control of cash and receivables.

ACC 1112 Accounting Principles II 4 Q.H.
(Prereq. ACC 1111)

The second of a series of accounting courses. Students are introduced to financial and managerial accounting decisions through class discussions, short exercises, and demonstration problems. Specific topics covered include: 1) control of inventory; 2) acquisition, depreciation, and disposal of plant and equipment; 3) paid-in capital related to sole proprietorships, partnerships, and corporations; 4) short- and long-term debt financing; 5) the analysis and interpretation of financial reporting; and 6) the statement of changes in financial position.

ACC 1148 Principles of Accounting 8 Q.H.
This course covers the content of courses ACC 1111 and ACC 1112 and is primarily intended for transfer students.

ACC 1210 Introduction to Accounting for the Non-Business Major 4 Q.H.
(Not open to College of Business Administration students)

Specifically for non-business majors, this course is designed to help provide a fundamental knowledge of accounting to students who do not expect to become accountants but would like the opportunity to learn to understand, interpret, and make use of accounting data. The course surveys the foundations of accounting and the role it plays in the management of the profit and nonprofit sectors of the American economy.

ACC 1330 Cost Accounting for Management 4 Q.H.

(Prereq. ACC 1112)

This course offers an examination of cost accounting from a managerial viewpoint. The impact of quantitative and behavioral aspects on budgets and cost control is stressed. This course is designed specifically for management majors.

ACC 1331 Intermediate Accounting I 4 Q.H.
(Prereq. ACC 1112 or equiv.)

The principal foundation course for accountants begins with a comprehensive review of basic accounting principles, operations, and financial statements. Development of accounting theory is stressed in the analysis of alternative treatments and procedures. Specific areas receiving intensive treatment are cash, accounts receivable, inventories, and current liabilities.

ACC 1332 Intermediate Accounting II 4 Q.H.
(Prereq. ACC 1331)

This course is a continuation of the study of accounting principles, concepts, and procedures. Specific topics emphasized are long-term assets, depreciation, stockholders equity, and EPS.

ACC 1339 Cost Accounting I 4 Q.H.
(Prereq. ACC 1112)

This course examines cost determination and use. Special consideration is given to manufacturing

concerns. Specific coverage includes cost behavior, relevant costs, performance evaluation, budgets, and standard costs.

ACC 1340 Cost Accounting II 4 Q.H.
(Prereq. ACC 1339)

This course is a continuation of ACC 1339 (Cost Accounting I) and gives special attention to the use of cost data in decision making, budget planning, and the control process.

ACC 1343 Intermediate Accounting III 4 Q.H.
(Prereq. ACC 1332)

This course completes the study of basic accounting concepts and covers special areas of concern to modern accounting practice. Leases, pensions, accounting changes, income tax accounting, changes in financial position, price-level and current-value accounting are studied.

ACC 1348 Accounting Theory and Practice 4 Q.H.

(Prereq. ACC 1343)

Objectives are to examine: 1) the theory and practice of corporate financial reporting and some of the controversial areas in accounting; 2) the pronouncements and research studies of the authoritative institutions of the profession relating to the practice of accounting; 3) the textual and periodical literature on accounting theory.

ACC 1349 Accounting Planning and Control 4 Q.H.

(Prereq. ACC 1340)

This course provides an examination of the role of management planning and control systems and problems inherent in their design and use, and defines the process of identifying factors in the design of these systems.

ACC 1501 Auditing 4 Q.H.
(Prereq. ACC 1343)

Designed for the student who plans to enter the public accounting profession, this course examines audit concepts, standards, and procedures, including the auditor's legal and ethical responsibilities. Emphasis is on concepts rather than procedures. Specific areas covered are auditing standards, auditor's reports, internal control, statistical sampling, EDP, and legal liability.

ACC 1505 Internal Auditing 4 Q.H.
(Prereq. Middler standing)

This course is designed to aid students in understanding how the internal auditor undertakes a review and appraisal of operations. Study will focus on the internal audit environment, preparation of long-range programs, the performance of preliminary surveys, flowcharting, the development of audit programs, sampling, audit techniques, and reporting. The course is case-study oriented.

ACC 1511 Federal Income Taxes I 4 Q.H.

(Prereq. ACC 1343 or permission of instructor)
This course stresses basic understanding of the federal income tax structure relating to individuals rather than to corporations. Students are required to complete several research cases directed at solving various tax problems. Case studies introduce the student to the current Internal Revenue Code, income tax regulations, and cumulative bulletins. Tax court cases and various private company publications are discussed.

ACC 1512 Federal Income Taxes II 4 Q.H.

(Prereq. ACC 1511)
This course is a continuation of ACC 1511 (Federal Income Taxes I), focusing on taxpayers other than individuals and the treatment of those property transfers subject to federal, gift, estate, and trust taxes. Tax research is an important element of this course. A major emphasis is given to tax planning considerations, especially to gift and death tax consequences.

ACC 1521 Advanced Accounting Problems 4 Q.H.

(Prereq. ACC 1343)
This course is an in-depth analysis of various accounting topics for the student planning a career as a professional accountant. Topics covered are government and not-for-profit accounting; partnerships; installment sales; consignments; segment and interim reporting; foreign currency accounting; troubled-debt restructurings; and liquidations, estates, and trusts.

ACC 1522 Advanced Accounting for Business Combinations 4 Q.H.

(Prereq. ACC 1343 or permission of instructor)
This course is a comprehensive analysis of the accounting theory and practice associated with corporate acquisitions and combinations. Topics include methods of consolidation-elimination of profits on intercompany transactions, purchase versus pooling of interests, and accounting for

good will. The course is intended for the serious student preparing for a career as a professional accountant.

ACC 1526 Management Accounting 4 Q.H.

(Prereq. ACC 1349)
This course examines the role of the management accountant. Topics include relation between financial and managerial accounting, design and use of accounting and control systems, measurement techniques and uses, the role of behavior in accounting, performance evaluation, and other topics of current interest.

ACC 1530 Accounting Systems 4 Q.H.

(Prereq. Middler standing)
This course examines the process of designing both financial and managerial accounting systems. The approach is conceptual, and the course considers the use of computer technology in designing new systems where computers are appropriate. The course assumes an understanding of accounting processes in both financial and managerial areas.

ACC 1531 Contemporary Accounting Problems 4 Q.H.

(Prereq. ACC 1332)
A seminar designed to survey some of the important problem areas currently facing the accounting profession. These areas will incorporate asset valuation, price-level adjusted statements, environmental considerations, income measurement, and governmental intervention.

ACC 1535 Computers in Accounting and Auditing 4 Q.H.

(Prereq. ACC 1501 or ACC 1505)
This course examines the use of computers in accounting and auditing. Topics include systems design and applications in accounting, internal control of computer-based systems, computer audit and control guidelines, and EDP audit tools and techniques.

Entrepreneurship

ENT 1330 Management of Smaller Enterprises 4 Q.H.

This is a general management course that focuses upon the strategies and operating problems of smaller, already established business enterprises. The course is designed for individuals who are considering entrepreneurial careers or careers in management, finance, or marketing within the smaller-company environment. Discussion will explore the characteristics and urgencies of problems that smaller companies are likely to encounter at different stages in their evolving life cycle, from the postnatal period to the more mature stage.

ENT 1344 Opportunity Analysis and Venture Capital 4 Q.H.

This course is concerned with the essential tasks performed prior to establishing a new venture. These include finding a suitable business opportunity or developing an idea for a product or service; analyzing the feasibility of the opportunity or idea; developing a business plan; structuring the venture team; seeking sources of seed capital; and forming a venture action plan for beginning operations.

ENT 1352 New Venture Creation: A Career Choice 4 Q.H.

(Prereq. Senior standing)

This course is designed to assist students interested in small business in answering a number of important questions through a systematic analysis of their own potentials for entrepreneurial careers: What is involved in starting my own business? What is my own entrepreneurial orientation and commitment? What managerial and behavioral skills do I need for achievement? How can I plan for my personal and entrepreneurial goals? Case discussions, self-assessment, goal-setting exercises, guest speakers, and a student-selected project are used.

ENT 1358 Small Business Institute Project 8 Q.H.

(Prereq. Junior standing; one entrepreneurship course or permission of instructor)

The Small Business Institute Field Project was brought into existence with the cooperation of the Small Business Administration (SBA) and some of its client companies in Greater Boston. A student team is expected to interact with a smaller company, helping management to analyze opportunities and problems facing the business, and to develop practical recommendations for the com-

pany's decision makers. Students are expected to allocate approximately one day per week to the project, including on-site work with the company owner-managers with whom they have been paired and to participate in related research, report preparation, and presentation of results. This real-world experience is blended with occasional class meetings and frequent team meetings with a faculty member to discuss the field work and to explore alternatives. Interim progress reports and a final report are presented to the client company, SBA, and the class.

ENT 1812 Honors: Risks and Rewards of Entrepreneurship 4 Q.H.

(Prereq. Honors participants or permission of instructor)

Anxiety and exhilaration run neck and neck through the small business experience. The degree to which these extremes of emotion occur has not been thoroughly studied. So far, research has concentrated on the backgrounds and attributes of entrepreneurs rather than on the psychological and physiological "fallout" from running their companies. The purpose of this honors seminar will be to identify situations and issues that can cause entrepreneurs stress, on the one hand, and satisfaction, on the other.

Finance and Insurance

FIN 1201 Personal Finance 4 Q.H.

(Not open to College of Business Administration students)

The course focuses on management of the total personal estate: budgeting, savings, insurance, investments, borrowing, taxes, Social Security, pensions, annuities, securities markets, mutual funds, and their integration.

FIN 1333 Financial Institutions and Markets 4 Q.H.

(Prereq. Middler standing)

The course aims to provide students an understanding of the financial environment faced by a firm as well as the financial institutions serving the economy. The course discusses the forces that determine the changes in money and capital markets and explores the implications of changing financial environment for the management of funds in a firm and/or financial institution.

FIN 1335 Managerial Finance 4 Q.H.

(Prereq. FIN 1438)

The objective of the course is to provide students the opportunity to gain knowledge of the advanced tools and concepts used in the management of funds. Topics include inventory and credit

policies, risk, capital budgeting, financial structure, cost of capital, dividend policy, and valuation of a firm. Overall financial strategy and timing of its implementation are also examined. Specialized topics—mergers and acquisitions, financial failure, and financial policy for multinational firms—may be considered in the course.

FIN 1346 Investment Management 4 Q.H.

(Prereq. FIN 1438 and MSC 1201)

This course offers a broad overview of the concepts, practices, and procedures of investment management. Areas covered include basic security types, security market operations, security analysis (both fundamental and technical) and an introduction to portfolio management.

FIN 1438 Introduction to Finance 4 Q.H.

(Prereq. ACC 1112 and middler standing)

The objective of this course is to acquaint students with basic processes, principles, tools, and concepts of finance. Topics include financial analysis, financial forecasting, profit planning, budgeting, working capital management, and capital budgeting. The course also covers the basics of financial markets, institutions, and sources of supply of different types of funds available to a firm.

FIN 1503 Taxes and Financial Decisions**4 Q.H.**

(Prereq. ECN 1105 and middler standing)

In this course, the case method is used to discuss a number of financial decisions that are greatly influenced by tax considerations, the most important of which are concerned with capital structure, dividend policy, acquisition terms, investment policies and liquidations. The federal income tax receives primary consideration, but state and foreign taxes are also discussed.

FIN 1522 Seminar in Option Markets**4 Q.H.**

(Prereq. FIN 1438 and FIN 1333)

While puts and calls have been traded for many years, a market for listed options only appeared in 1973. Trading options on exchanges made such activity much easier and opened many more opportunities for both speculation and the protection of security positions. The purpose of this seminar is to explain the basic mechanics of this market, the characteristics of puts and calls, the techniques that may be applied, and current developments in the field. Students will be required to do individual research related to current methodology and concepts. Some knowledge of money and capital markets, as well as corporate finance, is necessary for those taking the course.

FIN 1525 Seminar in Financial Futures**4 Q.H.**

(Prereq. FIN 1438)

This is a seminar in commodity futures markets centered in the area of financial futures, with special emphasis on interest rate futures. The course covers the methods of trading, margins, hedging, spreading futures contracts in treasury bills, commercial paper, treasury bonds, treasury notes, GNMA's, etc. Students prepare a seminar report on some aspect of the futures market.

FIN 1526 Securities Markets**4 Q.H.**

(Prereq. FIN 1438)

This course aims to analyze the operation of the securities market. Striking a balance between descriptions and analysis, the course provides students the opportunity to examine in detail the operation and function of investment bankers, broker-dealers, and securities exchanges. There is a thorough study of the mechanics of cash and margin accounts, trading options, and regulations affecting securities markets.

FIN 1528 Seminar in Finance Theory**4 Q.H.**

(Prereq. FIN 1438 and FIN 1385)

The course involves a discussion of the different theories related to the financial policies of business organizations and an analysis of the contributions of various theorists in finance. It covers topics such as debt capacity, capital budgeting under uncertainty, cost of capital, dividend policy, and the capital asset pricing model. The policy implications, limitations, and underlying assumptions of various theories are incorporated into the course.

FIN 1531 Long-term Financial Management**4 Q.H.**

(Prereq. FIN 1438 and FIN 1385)

This course focuses on several phases of long-term finance. Particular attention is devoted to complex cases dealing with capital budgeting, new financing, and mechanisms (both public and private) used to raise long-term funds.

FIN 1540 Management of Financial Institutions**4 Q.H.**

(Prereq. FIN 1438)

This course offers a broad study of the decision-making problems faced by financial institutions such as commercial banks, savings and investment institutions, and finance companies when viewed as competitive, profit-seeking business entities. Topics include the nature and scope of the capital markets confronting institutions, specialized problems regarding the sources and uses of funds of financial institutions, the nature of competition, the regulation of financial institutions, and strategic policy planning of financial institutions.

FIN 1544 Bank Management**4 Q.H.**

(Prereq. FIN 1438 and FIN 1323)

This course deals with the financial management of commercial banks and thrift institutions. The problems of liquidity and investment management, loan portfolio and capital management, and pricing problems associated with various sources and uses of funds are analyzed in the context of changing economic and regulatory environment for these institutions. The course is conducted through lectures, discussions, and cases.

FIN 1550 Real Estate Finance: Analysis and Investment**4 Q.H.**

(Prereq. FIN 1438)

This course provides students with a comprehensive overview of real estate finance. Factors affecting real estate investment are emphasized. Specific topics covered include: valuation (appraisal) market analysis development, ownership types, short-term financing, mortgage markets, the impact of inflation on real estate investment, and finance and investment strategies. The course is designed for students interested in a general overview of real estate finance, as well as those intending to pursue further studies in real estate. Instruction is primarily through readings, lectures, and case discussions.

FIN 1552 Entrepreneurial Decision Making in Real Estate**4 Q.H.**

(Prereq. FIN 1550)

This course provides an overview of property acquisition, development, and management from an entrepreneurial perspective. Topics include planning, financing, cost control, and management of construction, marketing, and joint ventures. All major land uses are considered. Instruction is pri-

marily through lectures and case discussions. Some class sessions may be devoted to guest speakers from the real estate community.

FIN 1557 Real Estate Finance and Investment Strategies 4 Q.H.

(Prereq. FIN 1550)

The objective of this course is to provide students the opportunity to acquire knowledge and skills for decision making in the context of organizational real estate investment strategies. Five general topical areas are covered: 1) measurement of risk and yield on real estate debt and equity investments, 2) comparison of the risk and return in real estate investments with other types of investments, 3) traditional and innovative financing techniques, 4) management of a real estate portfolio, and 5) development and implementation of real estate investment strategies. Instruction is primarily through lectures, readings, and case discussions.

FIN 1562 A Risk Management Approach to Employee Benefit Programs 4 Q.H.

(Prereq. FIN 1438)

The concept of risk management is employed to develop a framework for a systematic treatment of employee benefit programs. The risks associated with the employee are defined, methods used by an employer to handle these risks are reviewed, and the concept of cost minimization of employee benefit programs is introduced. Private insurance, Blue Cross/Blue Shield, and government programs are viewed as alternative financing mechanisms of employee benefit programs, and the benefits and costs of these institutional arrangements are discussed.

FIN 1566 A Risk Management Approach to Property and Casualty Insurance 4 Q.H.

(Prereq. FIN 1438)

The concepts of risk, uncertainty, risk management, and insurance are introduced. A comprehensive analysis of property and casualty insurance markets and products is presented from a buyer's perspective. Principal emphasis is placed on defining and analyzing alternative methods of treating risk in a business enterprise. The course discusses different risk management strategies and analyzes practical situations.

FIN 1580 Personal Financial Management 4 Q.H.

(Prereq. FIN 1438)

The course places emphasis on the development of personal financial management expertise based on an integrated plan for personal choices in which alternative courses of action are judged by their contribution to the attainment of the decision maker's particular set of economic objectives. The overall personal economic plan is the consistent focus of the course and unites such diverse topics as inflation and investment selection, insurance, short- and long-run hedges

against the purchasing power risk, purchasing assets, etc. The course is decision oriented and attempts to expose students to alternative courses of action and lead them toward a rational solution by developing techniques of estimating the success probabilities of alternative methods.

FIN 1760 International Financial Management 4 Q.H.

(Prereq. FIN 1438)

This course introduces students to the international financial environment. Subjects include balance of payments, exchange rates, Eurocurrencies, foreign capital markets, etc. The financial policies and practices of companies involved in multinational operations are considered. Specific topics include capital budgeting; capitalization policies, the use of Eurocurrency and Eurobond markets, and foreign exchange risk management by the international firm.

FIN 1770 Small Business Finance 4 Q.H.

(Prereq. FIN 1438)

This course utilizes the basic processes, principles, tools, and concepts of finance within the parameters of a small business to develop a complete financial plan that projects the future circular flow of funds by analyzing and then integrating the impact of both investment decisions (use of funds) and financial decisions (source of funds).

FIN 1802 Honors: Modern Portfolio Management 4 Q.H.

(Prereq. Honors participant or permission of instructor)

The course seeks to analyze the methods of selection, revision, and performance measurement of asset portfolios. The student will be exposed to the current and most modern methods of asset portfolio building used in business today. The concept of an efficient frontier of assets in the risk-return space will be presented and evaluated. The efficient frontier theory is used to identify the gains available from diversification and to select those securities or assets that best contribute to the goals of the portfolio. Included in the course is a simulated equity fund management project. An efficient portfolio-building software package is available to the students to help them in their analysis. Each student must initially select a number of equity securities to satisfy the stated objectives of his or her fund. At the end of the course the student must prepare and present an annual report evaluating the portfolio's construction and performance, with recommendations for revision. The course requires the student to bring a core knowledge in the areas of statistical analysis, accounting methods, and basic finance theories.

FIN 1803 Honors: Seminar in Finance Theory 4 Q.H.

(Prereq. Participant in Honors Program only)

See Course Description for FIN 1528.

Human Resources Management

HRM 1332 People and Productivity: Human Resources Management 4 Q.H. (Prereq. HRM 1432)

This course is designed to help students develop understanding of contemporary issues in human resource management. Problems posed by changing work patterns, labor force characteristics, union activities, and government policies are examined. Organizational experiments such as worker participation, job enlargement, and group incentives are discussed and evaluated from a managerial perspective.

HRM 1340 Personnel Administration 4 Q.H. (Prereq. HRM 1431)

This course explores basic traditional personnel functions, with an emphasis on the role of the personnel specialist. Functions include recruitment, selection, placement, training, and development of employees, as well as reward systems such as money and promotions. The recent challenge of new regulatory systems, such as affirmative action and occupational safety and health, on employment planning will be covered.

HRM 1345 Contemporary Labor Issues 4 Q.H. (Prereq. HRM 1431)

The course provides a study of current issues dealing with labor in its broadest sense. Labor unions and manpower institutions as well as the emerging development and training problems motivated by unemployment, poverty, and changing work patterns are discussed. Recent legislation dealing with the employment relationship is reviewed.

HRM 1348 Reward Systems: Wage, Salary, and Benefits Administration 4 Q.H. (Prereq. HRM 1431)

This course examines one of the major functions of personnel administration — compensation management — and its part in the overall personnel programs of the organization. The analysis of reward systems as supportive mechanisms of management and the formulation of compensation policy and implementation of compensation systems are developed through simulation exercises and group projects, as well as lectures and cases.

HRM 1349 Selection and Assessment of Employees 4 Q.H. (Prereq. HRM 1432)

The course examines three influences of employee selection and testing: first, the legal aspect of selection, where the greatest uncertainty is found; second, the influence of industrial psychology on selection and decision-making techniques; and third, the area of personnel practices itself, that is, the methods employers find effective in coping with legal requirements. Basic issues and procedures such as EEO, decision strategies, and the utility and evaluation of selection and appraisal systems will be covered.

HRM 1431 Complex Organizations 4 Q.H. (Prereq. Middler standing)

The course examines the structure and dynamics of the complex organization. Focus is on the design of the organization and its basic subsystems (reward, control, selection, development). Students have the opportunity to explore how organizational structures help shape human behavior. Emphasis is on understanding the interrelations among organizational structures, tasks, and individual characteristics within the context of a changing environment.

HRM 1432 Organization Behavior 4 Q.H. (Prereq. Middler standing)

This course explores the effects of individual, interpersonal, group, and leadership factors on human behavior. Managerial applications of behavioral and social science concepts are also explored, including job design, job satisfaction, performance appraisal, supervision, career dynamics, and organizational change. Emphasis is placed on helping the student develop skills in dealing with the human side of enterprise.

HRM 1501 Organizational Structure and Process 4 Q.H. (Prereq. HRM 1432 and HRM 1431)

An examination of various schools of management thought, including the classical, scientific management, human relations, and contingency approaches to management. This course also explores organizational concepts developed from research on organizations including: Interdependence, Uncertainty, Coordination and Differentiation-Integration. Readings and research findings will be applied to case examples of complex organizations.

HRM 1504 Strategies of Organizational Changes 4 Q.H. (Prereq. HRM 1431)

This course focuses on three basic areas: (1) organizations as stable systems that naturally resist both planned and unplanned change; (2) organizations as dynamic systems that continuously respond to both internal and external pressures for change; and (3) strategies and techniques for designing, implementing, and managing change. The role of the change agent will be discussed in this context.

HRM 1512 Motivation and Control 4 Q.H. (Prereq. HRM 1431)

This course provides an extensive analysis of various theories of motivation, including Herzberg's two-factor theory, expectancy theory, learning theory, need theory (McClelland), and competence motivation. This course also considers the behavioral implications of various organizational systems of measuring and controlling operations.

HRM 1515 Strategic Planning and Reward Systems 4 Q.H.

(Prereq. HRM 1432)

A study of the process of strategic planning with an emphasis on problems in planning system implementation. The importance of developing reward systems that recognize management performance in strategic planning will be explored. Corporate planning and reward systems in both the United States and Japan will be studied. Cases, readings, and a term paper will be used.

HRM 1519 Leadership 4 Q.H.

(Prereq. HRM 1431)

This course offers a study of the leadership function in a variety of organizational settings. Using a contingency approach, this course explores a range of possible leadership behaviors, relating the appropriateness of a particular style to a number of situational factors. Readings provide an opportunity to explore several contingency theories of leadership; cases allow for the application of these models; and videotaped role playing and self-assessment techniques permit the student to evaluate his/her own leadership style.

HRM 1520 The Changing Workplace: An On-Site View of Industrialization 4 Q.H.

(Prereq. HRM 1431)

America, and New England in particular, is noted as the place where the genius of industrial innovators and managers brought the industrial revolution to its first real flowering. This course deals in depth with the interactions of technical, economic, social, and managerial factors as they evolved in forming industrial New England. Emphasis is on the nineteenth century although forces will be traced from colonial New England to the present. Focus is on the participants in this dynamic free enterprise process — the managers and workers — and the settings in which they worked and lived. The seminar format includes on-site studies of factory settings, mill reconstructions, museums, and the communities in which developments took place. The seminar also includes films, lectures, and individual tutorials. Each student is required to complete a research project.

HRM 1539 Managing Careers 4 Q.H.

(Prereq. HRM 1431)

This course examines the tools for both self-assessment (investigating one's skills, abilities, needs, values, and interests) and career exploration (determining the nature of and requirements for entering and succeeding in various career fields). The goal of the course is to help students develop an individualized plan of action that summarizes a wide variety of data indicating an individual's present status and career goals, and the means by which to bridge the gap.

HRM 1542 Women in Management 4 Q.H.

(Prereq. Middler standing)

This course explores contemporary worklife problems for both men and women. Topics include: sex role stereotyping—its origins and impact in organizational settings; sexual harassment and affirmative action; dual career couples and their implications for organizational design; sex differences in leadership and power.

HRM 1581 Managerial Skills Seminar 4 Q.H.

(Prereq. HRM 1431)

This course offers a study of the nature of managerial work focusing on three key managerial roles — interpersonal, informational, and decisional. Behavioral determinants of administrative effectiveness are examined with an emphasis on the practical implications of and personal orientations to those key managerial roles.

HRM 1583 Seminar in Collective Bargaining 4 Q.H.

(Prereq. HRM 1431)

The course focuses on the organization, negotiation, and administration of collective-bargaining relations between management and unions in different industries, services, and levels of government. Simulations of actual bargaining and an arbitration exercise are also a part of the course.

HRM 1760 International Labor Relations Systems 4 Q.H.

(Prereq. HRM 1431)

This course analyzes the labor relations systems of selected countries in comparison with that of the United States. The political, cultural, and economic forces that shaped these systems are also studied. Special attention will be given to such international institutions as multinational companies and the EEC. There will be cases, readings, and projects assigned.

HRM 1762 International Human Resource Management 4 Q.H.

(Prereq. Junior standing)

This course covers basic issues in human resources management relevant to managing in international and cross-cultural environments. Topics include selection and training of personnel for work in multicultural environments, managing the international employee in the United States and abroad, cross-cultural communication, international environments, special issues of concern to small business, and change in multinational companies.

HRM 1811 Honors: Designing Innovative Organizations 4 Q.H.

(Prereq. Honors participant or permission of instructor)

This course focuses on how high-technology firms must be designed and managed to perform effectively and to develop and bring new products to market. Students will be involved in: 1) the study of

literature pertaining to these issues; 2) the collection of data on the above issues by interviewing members of high-technology firms and administering questionnaires; 3) analysis of the data in an attempt to discover how effective firms function; and 4) writing of a report based on their study. Students will thus be exposed to the techniques and requirements of research, have an opportunity to deal with executives and managers in high-technology firms, and be asked to critically evaluate new, as well as existing, literature on the subject of organization design and theory.

HRM 1818 Women in Managerial Careers

4 Q.H.

(Prereq. Honors participants or permission of instructor)

This course offers an opportunity for both male and female students to explore the barriers that block women's advancement in management. Perspectives which emphasize the interaction of the individual with the organizational environment will be emphasized. Specific topics include: mentor-protégé relationships; the fate of tokens; power through alliances; the trials of multicommitment; the impact of socialization; entrepreneurship and women. The course will culminate in a team research project and oral presentation.

International Business Administration

✓ INB 1338 Introduction to International Business 4 Q.H.

(Prereq. Middler standing)

This focuses on the cultural, economic, and political aspects of domestic and foreign environments and their effect on the international operations of business firms. Topics covered include 1) the principles, patterns, and potential of international trade and investments; 2) the development of management strategies for international businesses; and 3) the organization and management of the firm's international operations.

✓ INB 1352 Seminar in International Business 4 Q.H.

(Prereq. INT 1338)

This course applies the concepts and skills acquired in other international and domestic courses to the solution of managerial problems. It focuses on the task of solving significant managerial problems in international and foreign cultural contexts. Students' reports form a major part of this course and are expected to concentrate either on a functional business area related to international operations or on analyses of market

opportunities and methods of entry in a foreign environment. Other instructional vehicles include case analyses and discussions of current issues.

INB 1501 Comparative International Management

4 Q.H.

(Prereq. Middler standing)

The objective of this course is to help to develop the student's conceptual and analytical abilities to: 1) identify and analyze management systems in various national settings and 2) understand the impact of economic, social, political, and cultural variables on management systems.

INB 1731 Cultural Aspects of International Business

4 Q.H.

Using a managerial perspective, this course will cover issues that arise when a firm moves from its home country to a host country that may have a different national culture. Although it will usually take the perspective of the U.S.-based firm that operates abroad, it will spend some time on what happens to other national firms operating in the United States and in third country environments. The way in which "corporate culture" evolves in the context of national culture and the impact on managers will be a central issue.

Management

MGT 1115 Introduction to Business 4 Q.H.

This course focuses on the business organization as a system of interrelated functions and operations, the interactions between the organization and its environment, and the role of management in business organizations.

MGT 1345 Legal Aspects of Business 4 Q.H.

This course examines the legal aspects of business transactions and business relationships involving contracts; sales, bulk transfers, and se-

cured transactions under the Uniform Commercial Code; principal and agency; and suretyship and guaranty.

MGT 1446 Business and Society

4 Q.H.

(Prereq. HRM 1431 and junior standing)

This course offers an analysis of environmental influences — economic, legal, technical, social, cultural, and ethical — affecting the corporation. The focus is on managerial decision making and relieving the tensions generated by these external factors.

MGT 1450 Business Policy**4 Q.H.**

(Prereq. HRM 1431)

This course focuses on corporate strategy and its elements, including an analysis of the company, its resources, opportunities, environment, and decision makers. Emphasis is on decision making and implementation of strategy while operating a company in the context of a business simulation.

MGT 1571 The Law of Business Organizations and Commercial Paper**4 Q.H.**

(Prereq. MGT 1345)

This course is an introduction to the legal aspects of the typical forms of business organizations, partnerships, corporations, and the rights, responsibilities, and liabilities involved. The course also covers the law governing commercial paper under the Uniform Commercial Code, and the Bankruptcy Reform Act of 1978.

MGT 1572 Law of Wills, Trusts, and Estates**4 Q.H.**

Topics include requirements of valid will, claims of and against estates; the administration of estates, both formal and informal; essential elements for the creation of a trust; kinds of trusts, including inter vivos and testamentary trusts; the rights, responsibilities, and liabilities of trustees; and the rights of beneficiaries.

MGT 1573 Bulk Sales and Bankruptcy**4 Q.H.**

In examining bulk transfers, a detailed study is made of the Uniform Commercial Code, Article 6; the need of the transferor to give to the transferee a sworn list of all his creditors; the giving of notice to the listed creditors; the contents of the notice, what creditors are protected; and the legal consequences of failure to comply with the Code. The bankruptcy aspects of the course deal with both voluntary and involuntary bankrupts; the appointment and duties of the trustee; provable and dischargeable debts; priority of debts; discharge and acts that bar a discharge.

MGT 1574 Law in Society**4 Q.H.**

(Prereq. Middler standing)

The course is designed to provide students the opportunity to acquire a broad view of their legal rights, obligations, and responsibilities in their relations with others and with the state. Includes study of torts such as assault and battery, trespass, negligence, slander, libel, and deceit; and crimes such as homicide, assault and battery, robbery, arson, larceny, and burglary.

MGT 1591 Independent Study**1 Q.H.**

For a student who has received approval of a proposal to undertake independent study in lieu of any course required in the various concentrations. Each teaching area considers proposals presented by students to its Independent Studies Committee for evaluation and approval. Every proposal requires a detailed outline of the objectives and plan of study and must be accompanied by a supporting statement from the supervising

faculty member under whose direction the study will take place. A copy of the final report prepared by the student will be presented to the appropriate Independent Studies Committee. Further information about the Independent Studies Program can be obtained from area coordinators.

MGT 1592 Independent Study**2 Q.H.**

Same as MGT 1591

MGT 1593 Independent Study**3 Q.H.**

Same as MGT 1591

MGT 1594, MGT 1595, MGT 1596, MGT 1597 Independent Study**4 Q.H.**

Same as MGT 1591

MGT 1720 Labor Law**4 Q.H.**

(Prereq. Middler standing)

The purpose of this course is to help acquaint the student with the many constitutional and legal problems involved in labor organizing, industrial relations, labor negotiations, labor contract enforcement, and dispute resolution. Cases are studied for the legal principles underlying the common law, state and federal laws, and the constitutional questions of power and authority. The Sherman Act, Clayton Act, Norris-LaGuardia Act, and Labor Management Relations Act are considered.

MGT 1808 Honors: Seminar on the Management of Innovation**4 Q.H.**

(Prereq. Honors participant or permission of instructor)

The management of technological innovation is of critical importance to American companies as they face increasing worldwide competition. Knowledge in the area is advancing rapidly and incorporates work from several disciplines, including strategy, marketing, organizational behavior, and finance. This course will be run as a research seminar. Students will be responsible for identifying relevant topics in the management of innovation and completing a research study. Students can work either individually or in small groups on the research topic they define. Students will be required to submit a research proposal, a progress report at mid-quarter, and a final paper and presentation.

MGT 1809 Honors: Public Policy in Private Enterprise: An Evaluation of Government**4 Q.H.**

(Prereq. Honors participant or permission of instructor)

The course will address the major forms of regulation from classic industry — specific regulation and anti-trust to socially motivated regulation such as equal employment opportunity and environmental protection. The goal of the course is to increase students' understanding of the regulatory arena and to analyze the regulatory function. The course will culminate in an individual term research project and an oral presentation.

MGT 1810 Honors: The Japanese Company: A Study in Comparative Management 4 Q.H.

(Prereq. Honors participants or permission of instructor)

This course will compare the Japanese company with the American company. Study includes the historical and political-social-economic contexts in which the Japanese company operates. A research project requiring library and field research is required. The course probes the management practices of U.S.-based companies owned and operated by Japanese corporations, the results of American firms that have tried to adopt a Japanese model for U.S. operations and the reality and myth of "Japan, Inc."

MGT 1813 Honors: Regulation and Its Reform — An Evaluation of Government Regulation of Business Honors Course 4 Q.H.

(Prereq. Honors participants or permission of instructor)

Why are airline fares behaving so erratically? What are the potential effects on telephone prices and services since the ATT breakup? What is the "bubble policy" and how will it help the environment? These are just a few of the questions that will be addressed in this course through current readings and informal class discussions. What should a student take away from this course? First, he or she should have an increased understanding of regulatory theory and structure, but more importantly he or she should begin to comprehend how strong governmental influences have affected the present business environment and how the government business relationship may change in the future.

MGT 1814 Honors: Corporate Strategy 4 Q.H.

(Prereq. Honors participants or permission of instructor)

This course will deal with establishing corporate strategies and policies at the top level. Each of several small teams of students will be expected to study a corporation, its competitors, and its industry; describe its strategic behavior; and suggest ways in which its strategy could be improved. Drawing on his experience as a CEO, corporate director, and consultant, the instructor will discuss key strategic issues with the class and assist them in analyzing and meeting officials of the firms they choose to study. One term paper and no examinations.

Also see course ENG 1381, Writing for the Professions: Business Administration.

MGT 1815 Honors: Managerial Implications of and Research Opportunities in Business and Society 4 Q.H.

(Prereq. Honor participants or permission of instructor)

This seminar will explore the managerial implications of the shifting relationships between business, government, and society. As students become familiar with these relationships through readings and information supplied by guest speakers, they will be required to develop their own group research project. These projects will allow the students to examine the relationships on a first-hand basis in a field setting. Grading will be based on the research proposal, an interim report, and the completed project.

MGT 1819 Honors: Seminar in Research 4 Q.H.

(Prereq. MSC 1201)

This seminar focuses on the definition of research in the context of the business environment, research methodologies, and the student's attempt at research through a term project. Methodological issues include the formulation of concepts, hypotheses, and theories; the design of research projects; data collection; data analysis; and report writing. The term project involves investigation of a subject of interest to the student. The projects are intended to serve as prototypes of honors thesis.

MGT 1820 Independent Study (Honors) 4 Q.H.

Directed study toward fulfillment of Honors Program requirements. Open only to students who have been accepted into the Honors Program. Procedures for arranging the Honors Independent Study are the same as those for MGT 1594.

MGT 1821 Honors: The Computer Software Industry—Strategy and Management 4 Q.H.

This course is designed to introduce participants to the evolving structure and strategy of the computer software industry. Within the broad industry, the fastest-growing segments are custom systems and packaged software. The course will begin by explaining how environmental factors have led to the importance of packaged software, and go on to provide cases and readings that help the student to understand and analyze management policies and problems in this industry.

MGT 1891 Honors Thesis in Progress 0 Q.H.**MGT 1892 Honors Thesis 8 Q.H.****MGT 1893 Honors Thesis in Progress 0 Q.H.****MGT 1894 Honors Thesis 12 Q.H.**

Marketing

MKT 1331 Marketing Management 4 Q.H. (Prereq. MKT 1435)

This course is designed to provide training in marketing decision making. Case studies simulating actual business settings are used to help students develop analytical abilities and sharpen their communications skills. Topics covered range from techniques used to analyze a market to the development of a total marketing strategy (product policy, pricing policy, promotion policy, and distribution policy).

MKT 1341 Marketing Research 4 Q.H. (Prereq. MKT 1331)

This course focuses on the survey research process and the analysis of data using "canned" computer programming routines. Among the topics covered are: 1) problem definition, 2) research design, 3) sampling techniques, 4) questionnaire development, 5) data collection methods, and 6) data analysis. Students are expected to work on group projects with participating firms. No previous computer experience required.

MKT 1351 Competitive Strategy 4 Q.H. (Prereq. MKT 1331)

A capstone marketing course, required of all students with a marketing concentration. The focus is on the formulation of marketing strategy at a policy level and its implementation in a dynamic environment.

MKT 1435 Introduction to Marketing 4 Q.H. (Prereq. Middler standing)

This course consists of lectures, readings and small-group discussions on the role of marketing in contemporary society, in the business enterprises, and in the nonprofit organization. Consideration is given to the planning, operation, and evaluation of marketing and promotional efforts necessary to the effective marketing of consumer and industrial products and services in both profit and nonprofit organizations.

MKT 1501 Introduction to Retailing 4 Q.H. (Prereq. Middler standing)

This course explores the range of retail firms that comprise the retailing industry, from large mass merchandisers to small specialty outlets. The functions, practices, and organizations of various store types are examined. Current issues, career opportunities, the environment of retailing and retailing's role in the economy are among topics considered.

MKT 1503 Retail Merchandising and Control 4 Q.H.

(Prereq. MKT 1435 or permission of instructor)
This course examines the concepts and techniques of store operations and merchandise management. Topics such as calculating and planning markups and markdowns, pricing, inventory con-

trol, stock turn, open-to-buy, profitability analysis, and expense control are considered.

MKT 1507 Retail Strategies and Problems 4 Q.H.

(Prereq. MKT 1435; junior or senior standing or permission of instructor)

This course considers strategic and policy decisions of major retail enterprises engaged in food, apparel, and general merchandise distribution. The evolution of retail institutions is analyzed along with the characteristics of and prospects for new store types.

MKT 1512 Marketing for Nonprofit Organizations 4 Q.H.

(Prereq. Middler standing)

This course examines the unique characteristics of marketing in public and nonprofit enterprises. It aims to expand the scope of marketing management concepts beyond the traditional setting of business. Particular attention is paid to the basic decision-making differences between public and private firms. The course involves case analysis, assigned readings, and a group project.

MKT 1515 Marketing in the Service Sector 4 Q.H.

(Prereq. MKT 1435)

The course provides a basic treatment of methods and techniques for marketing in the service sector, which includes sports, recreation, public service, banking, insurance, and hotels. In addition to the principles covered, a number of descriptive studies will be analyzed covering the application of such marketing principles in key service areas.

MKT 1523 Advertising Management 4 Q.H. (Prereq. MKT 1331)

This course focuses on the management of the advertising function in relation to a firm's overall marketing objectives. The course approaches the subject from the perspective of the user of advertising (e.g., product manager, marketing manager). Case studies and text material are used to help the student develop decision-making skills.

MKT 1531 Sales Management 4 Q.H. (Prereq. MKT 1331)

This course is designed to help the student develop decision-making skills necessary for both building and maintaining an effective sales organization. Cases and readings are used to examine the strategic and operating problems of the sales manager. Major topic areas include the selling function, sales management at the field level, and the sales executive.

MKT 1536 Brand Management 4 Q.H. (Prereq. MKT 1331)

This course focuses upon the management and development of brand strategies as well as the management of the product mix in the multi-

product firm. Topics include evaluating and planning new consumer product introductions, identifying and screening new product opportunities, evaluating market performance, segmenting the product/market, and managing the product line.

MKT 1540 Marketing Channels 4 Q.H.
(Prereq. MKT 1435 or permission of instructor and junior or senior standing)

This course studies marketing structures and institutions: their evolution, functions, interrelations, and the management of their role in the marketing process.

MKT 1542 Industrial Marketing 4 Q.H.
(Prereq. MKT 1331)

This course examines the marketing of products where business firms are the potential customers. Upperclass elective, open to juniors and seniors.

MKT 1545 New Product Development 4 Q.H.
(Prereq. MGT 1450)

For most firms, coping with the problems of environmental change through modification of the product line is both vital and difficult. This seminar is concerned primarily with the examination and analysis of the problems firms face in directing and managing their new product development activities.

MKT 1553 Foundations of Consumer Behavior 4 Q.H.
(Prereq. MKT 1331)

This course is concerned with helping students develop an understanding of consumer attitudes and behavior processes as the basis of the design of marketing problems. Consideration is given to economic and behavioral models of consumer behavior and to underlying behavioral theories and concepts.

MKT 1560 Marketing Information and Decision 4 Q.H.
(Prereq. MKT 1331 or junior or senior standing or permission of instructor)

This course considers state-of-the-art marketing information systems and computer-based business aids. Their applicability to various marketing management situations is explored. "Hands-on" experience is provided through the use of actual business case studies.

MKT 1573 Workshop in Negotiations 4 Q.H.
(Prereq. Junior or senior standing)

The objective of this course is to aid students in improving their understanding of the negotiations process and their ability to plan and conduct negotiations effectively. Class activities involve readings, lectures, and discussions, as well as numerous case discussions and live and videotaped role-play negotiation exercises.

MKT 1580 Quantitative Methods in Marketing 4 Q.H.
(Prereq. MSC 1201)

This course focuses on statistical methods and techniques commonly used in the analysis and interpretation of survey and experimental data. "Canned" computer programs will be used extensively to illustrate the applicability of the methods discussed. No previous computer experience required.

MKT 1760 International Marketing 4 Q.H.
(Prereq. MKT 1435)

This course is designed to help familiarize the student with those aspects of marketing that are unique to international business within the framework of traditional functional areas of marketing. The focus is on the environment and the modifications of marketing concepts and practices necessitated by environmental differences. Topics include cultural dynamics in international markets, political and legal environmental constraints, educational and economic constraints, international marketing research, international marketing institutions, and marketing practices abroad.

MKT 1805 Honors: Marketing and Public Policy 4 Q.H.

This course consists of an examination of major public policy issues of concern to marketers. These issues include advertising substantiation, unfair and deceptive advertising, product defects, advertising to children, advertising of alcoholic beverages and tobacco products, and pricing practices. The course will draw heavily on the past and present activities of the Federal Trade Commission and will use staff reports, judges' reports, commission decisions, as well as the evidence provided by companies in response to FTC actions.

Management Science

MSC 1199 Introduction: Quantitative Methods in Business 4 Q.H.
(Prereq. MTH 1114)

A model is a simplified representation or abstraction of reality. The focus of this course is on the representation of systems or managerial problems in the form of mathematical models and their ap-

plication to problem solving in business. Criteria for selecting an appropriate model description are discussed and specific techniques for development examined, including linear programming, differential calculus, and the use of descriptive statistics.

MSC 1200 Business Statistics I**4 Q.H.**

(Prereq. MSC 1199)

Statistics is a methodology concerned with data collection, analysis, and interpretation. Information generated by statistical methods is used for analyzing decisions in the face of uncertainty. This course introduces fundamental concepts and methodology of probability, probability distribution, Bayesian revisions, estimation, and hypothesis testing.

MSC 1201 Business Statistics II**4 Q.H.**

(Prereq. MSC 1200)

Continuation of MSC 1200. Topics include chi-square tests, simple and multiple regression-correlation analysis, and elementary concepts of decision theory.

MSC 1226 Introduction to Data Processing**4 Q.H.**

This course is designed to introduce the business student to those aspects of modern data processing techniques vital to his/her future job performance. During the first part of the course the student will have the opportunity to learn to program in the BASIC language on the University's VAX 11/780 time-sharing system. The second part of the course deals with the history of data processing, computer hardware and software, and an overview of the creation and operation of management information systems.

MSC 1441 Operations Management**4 Q.H.**

(Prereq. MSC 1201)

Operations Management is concerned with the productive system of an enterprise whereby inputs of technology, materials, personnel, and information are transformed into useful goods and/or services. The principal objective of this course is to introduce the student to the types of problems and issues encountered by the operations manager. Various models and techniques will be discussed, but the emphasis is on problem formulation and managerial implications.

MSC 1501 Purchasing and Materials Management**4 Q.H.**

(Prereq. MSC 1441)

Concerned with decisions related to the flow of materials from supplier to point of use. Special emphasis on problems related to purchasing, including negotiation, value analysis, supplier selection, etc. While greater emphasis is placed on materials management in manufacturing organizations, nonprofit and nonmanufacturing concerns are also included. Instructor applies latest research in field gleaned from projects sponsored by the National Association of Purchasing Management and the American Production and Inventory Control Society.

MSC 1511 Operations Planning and Control**4 Q.H.**

(Prereq. MSC 1441)

This course focuses on the planning and control necessary for an enterprise to respond to customer demand. Specific topics include the design of the planning and control system, inventory planning and control, forecasting for operations planning, and operations scheduling.

MSC 1523 Production Management**4 Q.H.**

(Prereq. MSC 1441)

A continuation of MSC 1441.

MSC 1553 Decision Analysis**4 Q.H.**

(Prereq. MSC 1201)

This course focuses on the analysis of decision making with particular emphasis on realistic problems under uncertainty. The course aims to help improve the student's ability to make better decisions through a careful consideration of alternative courses of action and their consequences, relevant objectives, and the element of risk. Topics include the basic components of decision problems, the concepts of risk and utility, decision trees, and value of information and multicriteria decision making.

MSC 1564 High-Technology Operations Management**4 Q.H.**

(Prereq. MSC 1441)

High-technology industries are usually characterized by greater degrees of innovation and faster rates of obsolescence of products and capital equipment than other industries. In addition, they are supported by manufacturing operations that are at the early phases of the learning curve. This course deals with the importance of these factors, and the application of the tools and techniques of operations management to firms operating in a high-technology environment. It is recommended for students interested in careers in high-technology manufacturing industries and also for those who analyze the manufacturing potential of high-technology firms, such as analysts for venture capitalists, and consultants.

MSC 1571 Management Information Systems**4 Q.H.**

(Prereq. MSC 1427 and junior standing)

This course will examine the design, implementation and operation of management information systems (MIS), and those characteristics of MIS that have the greatest impact on the effectiveness and efficiency of business organizations. Emphasis will be placed on computer-based systems that support managerial decision making, planning, and control. The course will include a computer project using a data base management system.

MSC 1821 Honors: Business Data Analysis**4 Q.H.**

(Prereq. Honors participant or permission of instructor)

One activity that every organization has to face is making decisions. Data analysis is a valuable input to such decision making. This course will examine various situations in decision making when data analysis can be helpful. This will involve both short-term and long-term forecasting problems. It will also examine the issue of causal modeling through a regression type of model.

MSC 1822 Honors: Decision Analysis with Multiple Objectives**4 Q.H.**

(Prereq. Honors participant or permission of instructor)

This course examines normatively oriented approaches to decision making with multiple conflicting objectives. Topics include the identification of decision criteria, courses of action and their consequences, assessment of risk and uncertainty, multiattribute preference models and utility assessment through tradeoff analysis, non-dominated decision alternatives, "satisficing," and other approaches. Discussions will include assigned case problems and a term project to be completed by each student.

MSC 1823 Honors: Managerial Applications of Artificial Intelligence**4 Q.H.**

Artificial intelligence is currently being brought into the commercial limelight after twenty-five years of basic research and application to problems in the fields of medicine, engineering, and the basic sciences. This course focuses upon existing and expected managerial applications in a variety of industries. It will include readings from relevant literature, guest lecturer presentations, and site visits. In addition, student teams will attempt to develop prototypical expert systems for specific managerial decision making problems in actual field settings.

MSC 1824 Honors: Micro-Computer Models for Operations Management**4 Q.H.**

The course will focus on the application of and experimentation with operations management models developed for use on microcomputers. The topics include: forecasting, inventory management, materials requirements planning, project scheduling, resource allocation in a capacity constrained operating system, and, if time permits, one or two additional OM models. The course will include an introduction to each model followed by practical application using a case study. Each case is structured so as to require use of the microcomputer to evaluate alternative solutions. It is possible that, instead of case studies, student teams apply two or more of the models to specific, existing problems in industry.

Transportation

TRN 1333 Principles of Transportation**4 Q.H.**

(Prereq. ECN 1105 and middler standing)

Topics include the political, social, and economic functions of transportation; development and structure of the domestic transportation system; the nature of government regulation and promotion of the several modes.

TRN 1335 Current Issues in Transportation Policy**4 Q.H.**

(Prereq. TRN 1333)

This course provides an overview of the regulatory process and its impact on the domestic transportation system; critical examination of topical policy issues that confront carriers, shippers, and the agencies of regulation.

TRN 1344 Physical Distribution Management**4 Q.H.**

(Prereq. Junior standing)

This course is concerned with movement, distribution, and control of raw material and finished goods flows. Examination of the importance of inventory control, scheduling, warehousing, and transportation in the design and operation of distribution systems.

TRN 1353 Seminar in Transportation and Distribution**4 Q.H.**

(Prereq. TRN 1353 and TRN 1337)

This is a discussion- and research-oriented course that focuses on a limited number of advanced transportation and distribution topics. Included is interaction with business and government through individual research on the topic chosen for presentation by the student.

Also see course MGT 1594 for Independent Study.

TRN 1514 Carrier Management**4 Q.H.**

(Prereq. TRN 1333)

This course examines the transportation system from the carrier's viewpoint; managerial response to a heavily regulated and rapidly expanding environment; focus on carrier decision making involving routes, scheduling, financing, and pricing of services.

TRN 1528 Urban Transportation**4 Q.H.**

This course focuses on the movement of people and freight in and around metropolitan areas. Study includes a management approach to the planning, implementation, and operation of mass transit systems. Interrelations of transit with other

urban programs, the auto mode, and the government/public sector will be discussed.

TRN 1545 Air Transportation 4 Q.H.
(Prereq. TRN 1333)

The course offers a managerial perspective on economics and regulation of aviation. The course probes aspects of commercial aviation, passenger and cargo, transportation, and key areas of general aviation.

TRN 1721 Transportation Labor 4 Q.H.
(Prereq. TRN 1333)

This course focuses on the significance of the labor component in the transportation industries. Attention is devoted to trends in employee com-

pensation, productivity, and bargaining patterns. Also examined are the role of government in this area and the impact of transportation labor on shippers, carriers, and consumers.

TRN 1760 International Transportation and Distribution Management 4 Q.H.

This course examines the present and future status of United States and world ocean and air transportation in international trade and development. The economic, regulatory, financial, and operating characteristics of these forms of carriage are examined with primary emphasis given to their impact on international trade patterns. Other topics include government promotion, subsidy, and technological innovation.

Counseling Psychology, Rehabilitation, and Special Education

CRS 1030 Introduction to Emotional Disturbances in Children 4 Q.H.

Review of emotional processes that interfere with learning behavior and a study of approaches used to deal with behavioral disorders. Emphasis is on classroom management techniques, use of consultation, and parent-teacher interaction.

CRS 1200 Introduction to Special Education 4 Q.H.

A survey of the characteristics and the social, emotional, and educational adjustment of special-needs individuals. The effects of society's attitudes, the individual's own attitude toward the handicap, and the effect of the handicap itself are evaluated. Current legislation will be reviewed.

CRS 1300 Introduction to Learning Disabilities 4 Q.H.

(Prereq. CRS 1200)

This course surveys behavioral characteristics of children who present specific deficits in perceptual, integrative, or expressive processes that impair learning efficiency. Students are expected to work to develop competencies in diagnosing curriculum materials and teaching methods.

CRS 1301 Diagnostics in Special Education 4 Q.H.

(Prereq. CRS 1200 and CRS 1300)

Students should work to develop competence in 1) observing, recording, and analyzing children's behavior and learning environments, including continuous measurement and informal assessment of general, specific, and behavioral learning needs; and 2) techniques of formal assessment of general, specific, and behavioral learning needs.

CRS 1302 Methods and Materials of Teaching in Special Education 4 Q.H.

(Prereq. CRS 1200, CRS 1300, CRS 1301, or senior status)

Course instruction will focus on the following areas: 1) development and implementation of indi-

vidualized educational plans, including task analysis, adaptation and selection of materials, strategies in applied classroom management techniques; and 2) adaptation and selection of materials and strategies in language arts, mathematics, and perceptual-motor skills.

CRS 1304 Socio-Psycho Dynamics of Family Life 4 Q.H.

An introduction to and survey of the internal and external dynamics of family life. The significance of such dynamics to the mental health of the special-needs child will be examined. The approaches to working with parents and the school-home relationships, as well as the effects of disability on the family, are explored.

CRS 1305 Psychology of the Mentally Retarded 4 Q.H.

Analysis of the etiology, nature, and needs of the retarded individual, emphasizing cognitive and psychosocial development. Implications of these characteristics for life-span management are explored in conjunction with parental and community attitudes and involvement.

CRS 1306 Introduction to Rehabilitation 4 Q.H.

Overview of and orientation to the field of rehabilitation, including its historical development, psychological implications, and sociological dimensions. Special attention is paid to rehabilitation of specific disability groups such as the physically disabled, emotionally disturbed, mentally retarded, alcoholic, drug dependent, and public offender.

CRS 1310 Intervention Strategies for the Human Services 4 Q.H.

(Prereq. ED 1302; ED 1102 and ED 1103 or PSY 1111 and PSY 1112; SPC 1338 or SPC 1330; ED 1301 or ED 1317; PSY 1272; PSY 1373)

Introduction to the wide range of skills used in working with clients in the various helping professions, e.g., counseling (individual and group),

advocacy, rehabilitation, community organizing, income maintenance, etc. Taught primarily through role playing, simulations, and interviews with practicing professionals; also readings, but no fieldwork requirement. Intended as preparation for more specialized courses. Required for Human Services majors but open to other students with appropriate backgrounds.

CRS 1314 Introduction to Group Counseling 4 Q.H.

(Prereq. CRS 1313)

This course provides a foundational exposure to the theory and skills of group counseling as it is practiced in various human service settings. Topics cover developmental stages of counseling groups: approaches to leadership style, and strategies for starting, maintaining, and terminating the counseling group. The course includes an opportunity for students to practice rudimentary skills of leadership of counseling groups and to become involved in focused group process activities.

CRS 1311 Case Management: Diagnosis and Treatment 4 Q.H.

(Prereq. SOC 1100 or ED 1100; ED 1102-ED 1103 or PSY 1111-PSY 1112; SOC 1240; ED 1302)

The course offers an introduction to the basic theory and skills of managing client's treatment programs in a variety of institutional settings. Students receive training to identify the components of a psychosocial assessment, examine commonly used techniques of planned service delivery and resource coordination, and review the diverse entitlements that are available to clients of diverse needs and backgrounds. Much of the instruction will occur in a seminar-like format.

CRS 1312 Introduction to Family Systems Counseling 4 Q.H.

(Prereq. CRS 1313)

This course provides an introduction to the concepts and skills of family systems therapy, a counseling orientation in which the family is the chosen social unit of assessment and intervention for the client's problem. The course covers major approaches within communications and structural frameworks, emphasizing implications for normal family development and interventions in dysfunctional systems, and addresses theory and strategies for working with marital and parenting subsystems. Course offers students a beginning opportunity to experience the manner in which their family affects their functioning in various social systems with which they have professional contact.

CRS 1313 Introduction to Counseling 4 Q.H.

(Prereq. Junior standing)

This course presents an exposure to major theoretical approaches to counseling. Students will receive training and practice in listening skills and are expected to develop facilitative responses. Classroom work will combine didactic presentations and experiential activities to assist students in understanding and implementing a variety of counseling approaches.

CRS 1800 Directed Study 4 Q.H.

(Prereq. Permission of instructor)

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. Preparation: Approval of the supervising faculty member and of the Dean's Office of the Boston-Bouvé College of Human Development Professions. Approval forms must be submitted to the Dean's Office during the quarter prior to registration for the Directed Study.

Department of Education

ED 1003 Reading/Study Skills I 4 Q.H.

Designed to provide instruction in study and organizational skills to students who demonstrate a need in these areas. The skills of previewing, locating the main ideas and related details, outlining, summarizing, note taking, and vocabulary development will be explored and applied to the content of courses that students may be taking as part of their requirements.

ED 1004 Reading/Study Skills II 4 Q.H.

(Prereq. ED 1003 and instructor's consent)

This course is an extension of Reading/Study Skills I and will expand upon such previously examined topics as organizational skills necessary for effective handling of text materials, note tak-

ing, vocabulary development, and comprehension. New topics include preparing for and writing examinations, writing and revising research papers, and an introduction to library skills. All skill work is expected to be applied to concurrent coursework.

ED 1005 Practicum in Reading and Study Skills 4 Q.H.

This course is designed to give students in the academic program, Project Ujima, comprehensive tools to help them to master the "how to" of reading textbooks, notetaking, outlining, introductory research skills, time management, studying skills, and other techniques necessary for success in college. The skill areas covered can be applied to other courses that students may be taking.

ED 1100 Education and Social Science 4 Q.H.

An interdisciplinary course that draws on anthropology, psychology, and sociology, and exposes students to some of the concepts, methods, and terminology of these fields. Main themes are the evolution of human nature, the influence of previous experience and learning on the behavior of individuals and groups, difficulties in achieving a full degree of humanity in a technological society, and the potentially powerful roles that "professional socializers" (teachers, clinicians, group leaders, etc.) can play in the lives of students and clients. Required for freshmen in the Boston-Bouvé College of Human Development Professions (except Physical Therapy); open to other students as an elective; prerequisite for subsequent courses in Social Foundations (ED 1317-ED 1308).

ED 1101 Education for the Future: A Creative and Humanistic Approach 4 Q.H.

Students in this course will be given the opportunity to gain a perspective on the array of conflicting learning experiences that bombard their lives; to identify the factors that influence what people learn and from whom; to evaluate the potential effects of these learnings. As a consequence, the students will be encouraged to develop frames of reference through which to examine their own roles in the education process. A creative and humanistic approach to teaching is the basis for all the work in this course.

ED 1102 Human Development and Learning I 4 Q.H.

Developmental processes from prenatal life up to adolescence. Theories of learning and personality with research and case material covering major aspects of psychological development.

ED 1103 Human Development and Learning II 4 Q.H.

Basic overview of the continuity of human development in contemporary society, from the pre-adolescent period through adolescence, adulthood, middle age, and old age. Significant areas of growth, development, and adjustment for each period are considered, including social, sexual, personality, motivational, and cognitive aspects. ED 1102 is not prerequisite for this course.

ED 1104 Analysis of the Instructional Process 4 Q.H.

(Requires a minimum of twenty hours of related experience in a school approved by the course instructor.)

Students examine conflicting theories about the nature of teaching and learning. The effects of traditional and innovative educational systems upon learners are evaluated. Educational tools for analyzing and evaluating various aspects of learning environments are identified and their use by students is refined during sequential field observations.

ED 1105 Day Care and Nursery Schools: Social and Cultural Origins 4 Q.H.

An exploration of the origins of the increased contemporary use of out-of-the-family child care arrangements in the United States and in selected European and Third World nations. Course topics include the interrelation of industrialization, technology, and family functioning; contrasting varieties of child care centers in operation today; and effects of the proliferation of child care centers on other aspects of society, such as neighborhood life, business, parents' lifestyles, elementary school curricula, government spending, and the job market in education and human services. Two to four hours per week of fieldwork in a child care center are required of each student.

ED 1106 Creative Expression in Children 4 Q.H.

(Prereq. ED 1102)

Designed to assist students who are interested in working with children in a variety of settings. Discussion focuses on the potentials of creative expression in interpersonal communication; the relation of children's creative experiences to their cognitive, emotional, and social development; and related topics that will provide students the opportunity to acquire experience and confidence in working with various media available for creative expression.

ED 1300 Education and Psychosocial Development 4 Q.H.

(Prereq. ED 1100 or equiv.)

(Prereq. PSY 1272 for human services majors)

Theories and research on the socialization functions of education. Topics covered include the relative influence of early vs. post-childhood socialization; the role of diverse educational experiences and institutions in personality development and change. Human services majors should arrange to take specially designated sections of this course, offered most quarters, after completing PSY 1272, Personality I.

ED 1301 Educational Applications of Social Psychology 4 Q.H.

(Prereq. ED 1102 or ED 1103)

Focus is on theory and research in social psychology especially relevant to education. Areas covered are prejudice in the classroom; the school as a setting for manifestation of authoritarian personality, attitude organization and change in an educational environment; the class and the clique as "small groups," the expression of need for achievement in various school structures; related topics.

ED 1302 The Human Services Professions 4 Q.H.

(Prereq. ED 1100, SOC 1100, or equiv.)

Explores what a human service agency is, how it comes into being, how it grows and changes. Attitudes, values, skills, and knowledge of the human

services worker are analyzed, as are reasons why people in modern society require human services assistance. Human services are viewed from the eyes of clients as well as society as a whole. Fieldwork in a human service agency is a major course component, as is a good deal of independent study. Required for all human services majors; open to other students on space-available basis.

ED 1303 Mental Health in Teaching 4 Q.H.
(Prereq. ED 1102 or ED 1103)

Factors involved in the choice of teaching as a career and psychological and occupational factors that contribute to teacher happiness, dissatisfaction, adjustment, and maladjustment. Examination of these factors is a background against which to consider: 1) what teachers can do to foster healthy personalities, 2) how to deal with psychological forces in the classroom, and 3) steps to strengthen the emotional development of the normal child.

ED 1304 Language and Cognition: Educational Implications 4 Q.H.
(Prereq. ED 1102 or ED 1103)

Development of language and thought in the child: concept learning, problem solving, and language acquisition. Particular consideration given to the implications of current research and theory in these areas for educational practice.

ED 1305 Cross-Cultural Studies of Child Rearing and Education 4 Q.H.
(Prereq. ED 1102 or ED 1103)

Child rearing and child life in contrasting cultures around the world. Emphasis is on cognitive, emotional, and behavioral outcomes of concern to American educators, human services workers, and parents. Consideration is given to alternative patterns of child rearing possibly useful in modern society. Readings focus primarily on ethnographic descriptions of particular cultures and psychological comparisons of children from contrasting backgrounds.

ED 1306 Measurement and Evaluation 4 Q.H.
(Prereq. ED 1104)

The fundamentals of measurement: the use of basic statistical concepts and techniques; evaluation of standardized and teacher-made tests.

ED 1307 Introduction to Educational Statistics 4 Q.H.

Emphasizes descriptive statistics useful in the evaluation of educational and related professional activities. Topics ordinarily covered include statistical notation, variability, probability, sampling techniques, linear regression, correlation, t-tests, and chi-square tests of significance. Examples of applications of these techniques will be drawn, so far as possible, from the fields for which students in the course are preparing, and may vary from quarter to quarter.

ED 1308 Education and Social Change 4 Q.H.
(Prereq. ED 1100 or equiv.)

A sociological exploration of educational systems as independent and dependent variables in social change. Instances of planned educational change in various countries and their implications for contemporary American society.

ED 1309 Organization and Politics of School Systems 4 Q.H.
(Prereq. ED 1100 or equiv.)

The political sociology of school systems in the United States. An analysis of the power and authority structures in contemporary education. Who decides what and how? Who controls the system? How are the various interest groups organized? What are the mechanisms for conflict resolution? The relation between professional and nonprofessional interest groups.

ED 1310 Class and Ethnic Relations in Education 4 Q.H.
(Prereq. ED 1100 or equiv.)

The various ways in which the American class system and patterns of ethnic group relations have affected, and have been affected by, American education. The limitations and potential of educational institutions with respect to the resolution of intergroup conflicts and the establishment of equal educational opportunities.

ED 1311 Schools as Social Systems 4 Q.H.
(Prereq. ED 1100 or equiv.)

Analysis of schools as sociocultural subsystems within the larger society. Functional interrelation between student and school subcultures, status and role systems, authority structures in American schools. During most quarters, one section of this course focuses on elementary and secondary schools and a second focuses on day care centers and nursery schools; students preregistering should choose the appropriate section.

ED 1312 Comparative Education 4 Q.H.

A comparison of the national school systems of selected foreign countries with the school system in the United States. Course content includes comparative data in the fields of teaching, speech and hearing, special education, and human services.

ED 1313 Current Issues in American Education 4 Q.H.

An analysis of the variety of current issues confronting teachers, speech and hearing clinicians, special education practitioners, and human services specialists. Attempts will be made to place these issues in a historical context.

ED 1314 Philosophy of Education 4 Q.H.

Objective is to help participants examine their own purposes in relation to those of the school as an institution. Course reading material will consist

primarily of philosophical writings on topics such as the ethics of educational intervention, the delineation of educational concepts, the educational messages of long-range speculations and utopias, and normative assumptions underlying educational policies.

ED 1315 Seminar in Human Learning and Motivation 4 Q.H.

(Prereq. ED 1102 or ED 1103)

Survey and analysis of the literature on human learning and motivation. Emphasis on interaction between human learning and motivation in the developmental process and the classroom.

ED 1316 Seminar in Adolescent Psychology 4 Q.H.

(Prereq. ED 1103)

In-depth examination of motivational, intellectual, social, and emotional development of adolescents, from end of pre-adolescence to beginning of young adulthood. Special attention is given to current issues such as drug use, sexual behavior, and vocational choice. Each student is expected to examine a topic of choice in some depth.

ED 1317 Seminar in Group Process 4 Q.H.

A study of the structure, dynamics, and function of face-to-face groups to learn about goal achievement and task orientation. The course operates mainly by committee or group instrumentation. The serious student should work to gain an understanding of the function of informal relationships within formal organizations, the various roles within groups, peer relationships, superior-subordinate relationships, authority and intimacy, and the inclusion and exclusion processes.

ED 1318 Seminar in Early Childhood Development 4 Q.H.

(Prereq. ED 1102)

The theory and research regarding the cognitive, personality, and social development of children from birth to six years, with respect to the implications for early childhood education. Various existing programs examined and new directions explored.

ED 1400 Fundamentals of Reading I 4 Q.H.

This is the introductory course in developmental reading for prospective Early Childhood and Elementary teachers. Emphasis is on language and symbolic process as it relates to beginning reading. Areas of skill development, such as word recognition and meaning comprehension, are studied in detail, as are some methods and techniques of testing and grouping. Also included are an introduction to some reading books and materials, methods of teaching, and the psychology of learning to read.

ED 1401 Introduction to Reading 4 Q.H.

This introductory course for noneducation majors provides an overview of the most common current approaches to teaching reading and writing, di-

agnosis and planning. Case studies, videotaped lessons, and direct observations in the Reading Clinic are analyzed and interpreted. The relationships between speech and hearing development and dysfunction and reading and writing are investigated.

ED 1402 Fundamentals of Reading II 6 Q.H.

A continuation and extension of Fundamentals of Reading I. Study skills; speed and fluency development areas. The tutorial work is extended and the student is given further opportunity to achieve familiarity with books, materials, and methods.

ED 1403 Remedial Reading 4 Q.H.

(Prereq. ED 1402)

For prospective teachers, this course may assist in familiarizing the student with some of the most commonly known reading problems in the typical classroom as well as in the Reading Clinic; analysis and evaluation of the typical diagnoses of such problems corrective programs. Tutorial work with a retarded reader, with each student keeping a log or journal of work with a particular reading problem.

ED 1404 Linguistics and Reading 4 Q.H.

(Prereq. ED 1402)

The major objective is to translate the knowledge gathered from linguistics with useful classroom instruction, which includes not only reading instruction, but basic instruction in the related language skills. The contributions, particularly of such writers as Fries, Barnhart, Bloomfield, Chomsky, and LeFevre, are experimented with and analyzed.

ED 1405 Literature and Learning Materials for Children and Young Adults 4 Q.H.

This course offers a comprehensive survey of the field of children's literature and literature for young adults. Although it is designed specifically for prospective teachers (and, in fact, is required of all Early Childhood and Elementary Education majors), it may also be taken as an elective by all students. Students will survey and evaluate examples of contemporary children's literature and other learning materials used in preschool, elementary, secondary, and remedial programs. Covered in this course are such recurring themes as: racism and sexism in children's books; controversial books for young children; contemporary illustrators; banned books, etc.

ED 1406 Elementary Education Curriculum I 4 Q.H.

(Requires a minimum of twenty hours of related experience in a school approved by the course instructor)

Various patterns of organizing elementary school curriculum are analyzed on the basis of the general objectives of the public school system in the United States. Students are expected to evaluate and to organize units of work that can accommo-

date children at different developmental levels. The integrated approach to curriculum organization is emphasized with language arts, music, and arts as central focus.

ED 1407 Elementary Education Curriculum II

4 Q.H.

Social studies curricula in use in elementary schools are evaluated, utilizing criteria that relate to significant content from the social sciences and democratic processes. Students are expected to develop independent units of work that apply to the social needs of learners and to various communities and cultures. Aspects of art, music, lifestyles and values of groups will be integrated into these units.

ED 1408 Fundamentals of Math and Science I

(Emphasis/Math)

4 Q.H.

(Requires a minimum of twenty hours of related experience in a school approved by the course instructor)

This is the first of two sequential courses in methods and materials of mathematics and science teaching for Early Childhood and Elementary Education majors. This course provides the opportunities for University students to explore various strategies and materials of teaching mathematics in a manner that takes in account the developmental stages of children.

ED 1409 Fundamentals of Math and Science II

(Emphasis/Science)

4 Q.H.

This is the second of two courses in methods and materials of mathematics and science teaching for Early Childhood and Elementary Education majors. This course offers the student the opportunity to explore some limited but varied content areas in science and to consider how these areas can be taught to children.

ED 1410 Methods and Materials for Teaching Adolescents and Adults I

4 Q.H.

Consideration of specific methods and materials appropriate to teaching adolescents and adults to develop in the students an understanding of the complexities of the materials and methodology of the teaching-learning process, to encourage within students attitudes conducive to and identified with good tenets of teaching, to foster in the students acceptance of the need to grow constantly and to be aware of the continuing development of the learning-teaching process.

ED 1411 Methods and Materials for Teaching Adolescents and Adults II

4 Q.H.

This course is sectioned according to the various subject areas of teaching techniques of organizing and presenting lessons, developing teaching materials, using audiovisual equipment, developing and implementing evaluation instruments, and selecting appropriate materials within the field of interest.

ED 1412 Fundamentals of Curriculum Development

4 Q.H.

An examination of how goals and objectives are selected and priorities are determined. Methods for designing educational programs to meet specified goals and methods of evaluating educational outcomes in terms of the goals of the program and techniques for modifying programs in the light of such performance.

ED 1413 Writing and the Teaching of Writing

4 Q.H.

(Prereq. ED 1104)

A study of the logical and rhetorical bases of exposition and argumentative writing; relationships of assumptions, assertions, and implications; the nature of proof in the sciences, social sciences, and the humanities; strategies of argumentation; the effective consequences of word choice and sentence structure

ED 1414 Current Issues in Teaching the Gifted and Talented

4 Q.H.

Students will examine issues that affect the type and quality of education available to the gifted and talented in the United States. Various approaches and programs will be described and evaluated, and conclusions will be reached about their effectiveness. Research findings on the needs of this segment of the population of learners will be examined in order to provide some criteria for future curriculum development.

ED 1415 Teaching Reading to Adolescents and Adults

4 Q.H.

For secondary education majors in the Boston Bouvé College of Human Development Professions who are preparing for teaching in the junior or senior high school. Emphasis is on language and symbolic process, word recognition, and meaning comprehension, and on methods and techniques of testing and grouping.

ED 1416 Supervised Field Placement: Early Childhood

2 Q.H.

A University-arranged institutional placement to allow students the opportunity to provide educational, remedial, and/or custodial services to children generally of ages two through five. Opportunity will be provided to analyze, develop, demonstrate, and evaluate skills and techniques in guiding the activities of children in nursery schools, day care centers, and/or kindergartens.

ED 1417 Student Teaching and Seminar

8 Q.H.

(Prereq. Formal acceptance into and completion of advanced professional sequence with minimum 2.0 q.p.a., both overall and in teaching major)

Full-time participation in a University-arranged and -supervised school program designed to provide opportunity for the analysis of learning and teaching and for the demonstration, evaluation, and development of teaching skills.

ED 1800 Directed Study 4 Q.H.

(Prereq. Permission of instructor)

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the department. Preparation: Approval of the supervising faculty member and the Dean's Office of the Boston-Bouvé College of Human Development Professions. Approval forms must be submitted to the Dean's Office during the quarter prior to registration for the Directed Study.

ED 1801 Directed Study II 4 Q.H.

For students who have completed ED 1800.

INT 1330 Field Experience in Human Services I 4 Q.H.

Human services students are required to fulfill two fieldwork placements during the last two years of their program. Each placement consists of 150 hours on site. The type of placement varies according to the student's interest. Field experiences are supervised by University staff to maximize the student's learning opportunity.

INT 1331 Field Experiences in Human Services II 4 Q.H.

(Prereq. INT 1330 and junior or senior status, permission only)

Continuation of INT 1330.

Health, Sport, and Leisure Studies

HSL 1100 Beginning Swimming 1 Q.H.

Instruction in basic swimming skills, with emphasis on personal water safety.

HSL 1101 Intermediate Swimming 1 Q.H.

(Prereq. HSL 1100 or equiv.)

Instruction in basic and advanced swimming skills, with emphasis on form and efficiency.

HSL 1103 Water Polo 1 Q.H.

(Prereq. HSL 1101 or equiv.)

Instruction in beginning water polo, with emphasis on personal skill, offensive and defensive team play.

HSL 1104 Advanced Life Saving 2 Q.H.

(Prereq. HSL 1101 or equiv.)

Instruction in Red Cross life-saving skills, techniques, and theory. Red Cross certification is possible.

HSL 1105 Water Safety Instructor 2 Q.H.

(Prereq. HSL 1101, HSL 1104)

Instruction in techniques, theory, and teaching methods in swimming and life-saving courses. Red Cross certification is possible.

HSL 1106 Beginning Scuba 2 Q.H.

(Prereq. HSL 1101 or equiv.)

Instruction in basic skin-diving and scuba-diving skills, with emphasis on personal safety.

HSL 1107 Small Crafts 1 Q.H.*

Introduction to basic skills in sailing.

HSL 1109 Beginning Gymnastics I 1 Q.H.

A coeducational approach to knowledge of and basic skills in floor exercise, vaulting, balance beam, parallel bars, uneven bars, high bar, and rings.

HSL 1110 Women's Gymnastics II 1 Q.H.

(Prereq. HSL 1109)

Focus is on knowledge and skill necessary in per-

forming the beginning compulsory routines on the balance beam, floor exercise, uneven bars, and vaulting.

HSL 1111 Women's Gymnastics III 1 Q.H.

(Prereq. HSL 1110)

Skill and knowledge related to the performance of optional routines in the four areas of competitive women's gymnastics.

HSL 1113 Men's Gymnastics III 1 Q.H.

(Prereq. HSL 1122)

Skill and knowledge related to performance in optional routines on the high bar, side horse, rings, floor exercise, parallel bars, and vaulting horse.

HSL 1114 Badminton 1 Q.H.

Instruction in basic badminton strokes, concepts, rules, strategies, and game play.

HSL 1115 Intermediate/Advanced Badminton 1 Q.H.

(Prereq. HSL 1114)

Instruction in badminton, including intermediate and advanced skills, with emphasis on singles and doubles match play and strategy.

HSL 1116 Tennis 1 Q.H.

Instruction in basic tennis strokes, concepts, rules, strategies, and game play.

HSL 1117 Intermediate/Advanced Tennis 1 Q.H.

(Prereq. HSL 1116 or equiv.)

Instruction in tennis, including intermediate and advanced skills, with emphasis on singles and doubles match play and strategy.

*Lab fee required.

HSL 1118 Beginning Archery 1 Q.H.
Selected skills in target shooting and practical experience in archery games, novelty events, and conduct of tournaments.

HSL 1119 Beginning Bowling 1 Q.H.*
Focus is on development of knowledge and skill necessary for competent performance in bowling at the beginning level. Practice provided in nearby commercial alleys.

HSL 1120 Beginning Golf 1 Q.H.
Instruction in fundamental golf skills, knowledge of clubs and their use, and golf etiquette.

HSL 1121 Beginning Self-Defense 1 Q.H.
A survey of the principles and fundamental skills. Instruction is geared to the beginning and intermediate levels.

HSL 1122 Men's Gymnastics II 1 Q.H.
(Prereq. HSL 1109)
Skill and knowledge related to the performance of beginning compulsory routines on the high bar, side horse, rings, floor exercise, parallel bars, and vaulting horse.

HSL 1123 Beginning Wrestling 1 Q.H.
Beginning level of instruction in basic wrestling maneuvers. Stress on fundamental breakdowns, escapes, takedowns, rides, and pinning combinations. Rules and scoring procedures discussed and modified matches conducted.

HSL 1124 Beginning Fencing 1 Q.H.
Instruction in basic foil fencing, including introduction to competition.

HSL 1125 Intermediate/Advanced Foil Fencing 1 Q.H.
(Prereq. HSL 1124 or equiv.)

Instruction in intermediate/advanced techniques of foil fencing, with special emphasis on competition, judging, and the use of electrical equipment.

HSL 1126 Karate 1 Q.H.
Fundamental techniques of unarmed combat for self-defense using the punches, kicks, and blocks of Tae Kwan Do/Karate.

HSL 1127 Karate II 1 Q.H.
(Prereq. HSL 1126)
Continuation of HSL 1126, with progression to more complex techniques and combinations of punches, kicks, and blocks related to Tae Kwan Do/Karate.

HSL 1128 Roller Skating 1 Q.H.
Instruction for beginners in recreational roller-skating skills.

HSL 1129 Beginning Ice Skating 1 Q.H.
Instruction for beginners in recreational ice-skating skills.

*Lab fee required.

HSL 1130 Figure Skating 1 Q.H.
(Prereq. HSL 1129 or permission of instructor)
Instruction in beginning and intermediate figure-skating skills.

HSL 1131 Yoga 1 Q.H.
Introduction to yoga skills and techniques for men and women at the beginning level.

HSL 1132 Weight Training 1 Q.H.
Introduction to the principles and use of resistive exercises: isotonic exercise (weights), isometric exercise, and the appropriateness of each.

HSL 1133 Physical Conditioning 1 Q.H.
Instruction in assessing one's personal physical fitness level with emphasis placed on establishing a personal exercise regimen based upon scientific principles of training. Special sections will be designated which use different mediums of exercise, such as aerobic dance techniques, running, and circuit training.

HSL 1134 Aerobic Exercise and Dance 1 Q.H.
An introduction to fitness through aerobic exercise and dancing.

HSL 1136 Beginning Handball 1 Q.H.
Knowledge and skills appropriate to handball at the beginning level.

HSL 1137 Beginning Cross-Country Skiing 1 Q.H.
Instruction in the fundamental techniques of cross-country skiing.

HSL 1138 Beginning Skiing 1 Q.H.
The course offers instruction in fundamental techniques of downhill skiing.

HSL 1139 Intermediate Skiing 1 Q.H.
(Prereq. HSL 1138)
The course provides instruction in downhill skiing, including intermediate and advanced techniques with emphasis on skill development.

HSL 1140 Basketball 1 Q.H.
Knowledge and skills appropriate for performance in basketball at the beginning level.

HSL 1141 Intermediate/Advanced Basketball 1 Q.H.

(Prereq. HSL 1140)
Knowledge and skills appropriate for performance in basketball at the intermediate to advanced levels.

HSL 1142 Volleyball 1 Q.H.
Knowledge and skills appropriate for playing volleyball at the beginning level.

HSL 1144 Field Hockey 1 Q.H.
Knowledge and skills appropriate for playing field hockey at the beginning level.

HSL 1145 Football 1 Q.H.
Fundamental skills and knowledge appropriate for beginning level performances in football.

- HSL 1146 Softball** 1 Q.H.
Knowledge and skill appropriate for performing in softball at the beginning level.
- HSL 1147 Baseball** 1 Q.H.
(Prereq. HSL 1146 or permission of instructor)
Knowledge and skill appropriate for baseball at the intermediate and advanced levels.
- HSL 1148 Women's Lacrosse** 1 Q.H.
Knowledge and skill appropriate for performance in lacrosse at the beginning level.
- HSL 1149 Men's Lacrosse** 1 Q.H.
Knowledge and skill appropriate for performance in lacrosse at the beginning level.
- HSL 1150 Soccer** 1 Q.H.
Knowledge and skill appropriate for performance in soccer at the beginning level.
- HSL 1151 Movement Education** 1 Q.H.
Concepts and techniques in movement education and exploration for elementary school educators.
- HSL 1152 Folk and Square Dance I** 1 Q.H.
Introduction to folk and square dance.
- HSL 1153 Modern Dance I** 1 Q.H.
Introduction to modern dance technique and style.
- HSL 1154 Modern Dance II** 1 Q.H.
(Prereq. HSL 1153 or equiv.)
A continuation of HSL 1153 with progression to more complex modern dance techniques and combinations.
- HSL 1155 Modern Dance III** 1 Q.H.
(Prereq. HSL 1154 or equiv.)
A continuation of HSL 1154 with progression into the expressive and choreographic use of modern dance techniques.
- HSL 1156 Ballet I** 1 Q.H.
Introduction to ballet fundamentals with emphasis on alignment.
- HSL 1157 Ballet II** 1 Q.H.
(Prereq. HSL 1156 or equiv.)
A continuation of HSL 1156 with emphasis on developing lyrical style.
- HSL 1158 Ballet III** 1 Q.H.
(Prereq. HSL 1165)
A continuation of HSL 1157 with emphasis on expanding the repertory of classical ballet movements.
- HSL 1159 Jazz Dance I** 1 Q.H.
Introduction to the fundamentals of jazz dance with emphasis on alignment.
- HSL 1160 Jazz Dance II** 1 Q.H.
(Prereq. HSL 1159 or equiv.)
A continuation of HSL 1159 with emphasis on developing jazz dance style.
- HSL 1161 Jazz Dance III** 1 Q.H.
(Prereq. HSL 1160 or equiv.)
A continuation of HSL 1160 with progression into more complex dance techniques and longer combinations.
- HSL 1162 Rhythmic Analysis** 1 Q.H.
(Prereq. Dance concentration or permission of instructor)
Analysis of rhythm as it applies to movement skills and basic dance.
- HSL 1163 Ballroom Dance** 1 Q.H.
An introduction to traditional and contemporary partner dancing.
- HSL 1165 Dance Improvisation/Composition** 1 Q.H.
(Prereq. HSL 1153, HSL 1156, or HSL 1159)
Practice in the use of dance as a medium for artistic expression. Emphasis on the development of skill in the use of improvisational techniques.
- HSL 1167 Beginning Racquetball** 1 Q.H.
Knowledge and skills appropriate for performance in racquetball at the beginning level.
- HSL 1170 Adapted Physical Education I** 1 Q.H.
Physical activity skills modified to meet the special needs of students with conditions which prohibit participation in regularly scheduled activity classes. Content will be arranged by a faculty member assigned by the department chairperson of Health, Sport, and Leisure Studies.
- HSL 1171 Beginning Boxing** 1 Q.H.
Instruction in boxing at the beginning level; emphasis on offensive and defensive techniques, scoring, training, and officiating.
- HSL 1172 Games and Activities for Children** 2 Q.H.
Introduction to simple ball games, running and tag games, self-testing activities, movement exploration, and rhythms appropriate for children. Course content appropriate for future parents, teachers, and youth leaders.
- HSL 1173 Beginning Track and Field** 1 Q.H.
Instruction in the fundamental skills in the various track and field events.
- HSL 1174 Intermediate/Advanced Track and Field** 1 Q.H.
(Prereq. 62.16L or equiv.)
Instruction in intermediate/advanced techniques in track and field events. Emphasis is placed on improvement of individual skills; techniques of officiating are discussed.
- HSL 1201 Guitar I** 1 Q.H.
An introduction to using the guitar in recreation programs. Skill development includes basic chords, progressions, and strumming techniques.

HSL 1211 Analysis and Coaching of Softball**2 Q.H.**

(Prereq. HSL 1146)

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate softball, including advanced skill analysis and management.

HSL 1250 Creative Dance I**2 Q.H.**

(Prereq. HSL 1154 or HSL 1165)

Theory and practice of methods and materials in teaching creative dance to elementary school children. Examination of children's performance and appropriate teaching techniques with off-campus observation and experience. Designed to partially satisfy pre-practicum requirements for teacher certification at K-9 grade level.

HSL 1251 Creative Dance II**2 Q.H.**

(Prereq. HSL 1154 or HSL 1165)

Theory and practice of methods and materials in teaching creative dance to secondary school youth. Examination of performance and teaching techniques with off-campus observation and experience. Designed to partially satisfy pre-practicum requirements for teacher certification at 5-12 grade level.

HSL 1252 Dance Composition I**3 Q.H.**

(Prereq. HSL 1154 or permission of instructor)

An analysis of basic dance choreographic elements—space, force, and time. Student solution of choreographic problems.

HSL 1253 Group Dynamics I**3 Q.H.***

An introduction to group dynamics through selected activities, discussion, and living and working together. A resident living experience for one week at the Warren Center is an integral part of the course.

HSL 1254 First Aid**2 Q.H.**

First-aid procedures recommended for the home, school, and community. Emphasis on practices endorsed by the American Red Cross.

HSL 1255 Human Movement**3 Q.H.**

An introduction to the nature and role of human movement and the analysis of skillful movement performance through participation and observation. Introduction to the objectives, literature, and organization of the profession of physical education.

HSL 1256 Life/Career Planning**3 Q.H.**

An examination and exploration of careers in physical education and related fields. The course provides an opportunity for students to assess personal skills and abilities, to research jobs of interest, and to practice specific career-planning skills.

*Lab fee required.

HSL 1257 History and Philosophy of Physical Education**3 Q.H.**

A survey of physical education from ancient times to the present. The influence of major philosophical positions upon the nature of physical education programs is analyzed.

HSL 1258 Elementary School Activities**3 Q.H.**

Focus is on introductory knowledge and skills necessary for teaching physical education to elementary-school-aged children. Students are expected to learn about children's performance and appropriate teaching techniques through observation and actual experience in off-campus schools and learning centers. Course is designed to satisfy partially the pre-practicum requirements for teacher certification at the K-9 level.*

HSL 1259 Secondary School Activities**3 Q.H.**

Physical activity appropriate for secondary school youth is studied in relation to their level of development and interest. Students are expected to learn about pupils' performance and appropriate teaching techniques through observation and actual experience in off-campus schools and learning centers. Course is designed to satisfy partially the pre-practicum requirements for teacher certification at the grades 5-12 level.*

HSL 1260 Perceptual-Motor Development**4 Q.H.**

(Prereq. ED 1102 and ED 1103; may be taken concurrently)

Course offers a study of the development of motor skills from birth through infancy, early childhood, adolescence, and adulthood, including skilled performance of the aged. Age expectations for perceptual-motor behavior are considered, with a focus on a functional adequacy in skilled performance.†

HSL 1261 Anatomy and Physiology I**4 Q.H.**

Gross anatomy and physiology of the human skeletal, joint, nervous, and muscular systems.

HSL 1262 Kinesiology I**4 Q.H.**

(Prereq. HSL 1261 or equiv.)

Science of human motion and anatomic and mechanical principles as they relate to an understanding of skillful, efficient, and purposeful human motion. Introduction to the cinematographic analysis.

HSL 1264 Adapted Physical Education I**4 Q.H.**

(Prereq. HSL 1606, HSL 1261, HSL 1262)

Survey of characteristics and attitudes pertaining to special-needs individuals, with particular emphasis on the effects of their presence on current

*Teacher certification requirements available in 106 Dockser Hall.

†Designed to partially satisfy pre-practicum requirements for teacher certification.

physical activity programs. Observations of special-needs programs are included.†

HSL 1265 Early Childhood Development 4 Q.H.
A study of the development of fundamental motor patterns (run, catch, kick, strike, jump, throw) from ages 0 to 5 years, including perceptual-motor relations operating in vision, audition, and proprioception.

HSL 1272 Jazz Dance Composition II 3 Q.H.
(Prereq. HSL 1160)
Analysis of the choreographic process including content, form, technique, and projection. Student solution of choreographic problems based upon literal and nonliteral themes.

HSL 1300 Swimming Analysis 2 Q.H.
(Prereq. HSL 1101 or permission of instructor)
Instruction in theory, analysis techniques, and teaching methods in swimming.

HSL 1301 Analysis and Coaching of Men's Gymnastics 2 Q.H.
(Prereq. HSL 1113)
Skill analysis and coaching of men's gymnastics, with emphasis on appropriate teaching methods, new trends, and judging.

HSL 1302 Analysis and Coaching of Badminton 2 Q.H.
(Prereq. HSL 1115)
Analysis of performance and methods of teaching and coaching in badminton.

HSL 1303 Analysis and Coaching of Tennis 2 Q.H.
(Prereq. HSL 1117)
Analysis of performance and methods of teaching in tennis.

HSL 1304 Analysis and Coaching of Fencing 2 Q.H.
(Prereq. HSL 1125)
Advanced skill analysis and coaching of fencing. Special emphasis on current research and teaching methods.

HSL 1305 Analysis and Coaching of Golf 2 Q.H.*
(Prereq. HSL 1120 or equiv.)
Advanced skill analysis and coaching of golf. Special emphasis on course play and teaching methods.

HSL 1306 Analysis and Coaching of Track/Field 2 Q.H.
(Prereq. HSL 1135 or equiv.)
Advanced skill analysis and coaching techniques for selected track and field events. Special emphasis is placed on the analysis of common movement patterns, teaching methods, and coaching techniques.

†Designed to satisfy partially pre-practicum requirements for teacher certification.

HSL 1307 Analysis and Coaching of Wrestling 2 Q.H.

(Prereq. HSL 1123 or equiv.)
Analysis of performance and techniques of teaching selected wrestling skills are covered in detail. Application of research to methodology is stressed.

HSL 1308 Analysis and Coaching of Baseball 2 Q.H.

(Prereq. HSL 1147)
The basic techniques and responsibilities of coaching interscholastic and intercollegiate baseball, including advanced skill analysis, position and team play, conditioning, practice organization, and team management.

HSL 1309 Analysis and Coaching of Basketball 2 Q.H.

(Prereq. HSL 1140)
The basic techniques and responsibilities of coaching interscholastic and intercollegiate basketball, including advanced skill analysis, position and team play, conditioning, practice organization, and team management.

HSL 1310 Analysis and Coaching of Field Hockey 2 Q.H.

(Prereq. HSL 1144)
The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate field hockey, including advanced skill analysis, position and team play, conditioning, practice organization, and team management.

HSL 1311 Analysis and Coaching of Football 2 Q.H.

(Prereq. HSL 1145)
The basic techniques and responsibilities of coaching interscholastic and intercollegiate football, including advanced skill analysis, team conditioning, offensive and defensive systems, practice organization, team management, and coaching staff organization.

HSL 1312 Analysis and Coaching of Lacrosse 2 Q.H.

(Prereq. HSL 1148 or HSL 1149)
The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate lacrosse, including advanced skill analysis, position and team play, conditioning, practice organization, and team management.

HSL 1313 Analysis and Coaching of Soccer 2 Q.H.

(Prereq. HSL 1150)
The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate soccer, including advanced skill analysis, position and team play, conditioning, practice organization, and team management.

HSL 1315 Analysis and Coaching of Volleyball (Men-Women) 2 Q.H.

(Prereq. HSL 1142)

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate volleyball, including advanced skill analysis, position and team play, conditioning, practice organization, and team management.

HSL 1316 Theory of Officiating 2 Q.H.

Knowledge and skills in the basic concepts of officiating individual and team sports.

HSL 1317 Sports Officiating: Team Sports 2 Q.H.

Theory, practice, and techniques of officiating in team sports such as basketball and volleyball.

HSL 1318 Sports Officiating: Individual Sports 2 Q.H.

Theory, practice, and techniques of officiating individual sports such as tennis and badminton.

HSL 1320 Analysis and Coaching of Women's Gymnastics 2 Q.H.

(Prereq. HSL 1111)

Skill analysis and coaching of women's gymnastics, with emphasis on appropriate teaching methods and new trends.

HSL 1427 Survey of Recreation Facilities 3 Q.H.

Study of fundamental management and administration concepts for a wide variety of outdoor areas and facilities such as parks, beaches, ice rinks, marinas, camps, and community centers.

HSL 1600 Psychology of Sport 2 Q.H.

(Prereq. P.E. or permission of instructor)

The psychological analysis of behavioral patterns and deviations of sports participants, including spectators and coaches. Emphasis on emotions, motivation, competition, and learning factors. Discussion of current sports highlights.

HSL 1601 Sociology of Sport and Dance 2 Q.H.

(Prereq. Permission of instructor)

The study of sport and dance as social institutions, including theories explaining the role of each in contemporary society and the part of each in evolving societies.

HSL 1602 Theory of Coaching 2 Q.H.

An analysis of learning principles, sociology, and psychology as applied to coaching individual, dual, and team sports. Techniques and standards of squad recruitment, organization, leadership, and coaching ethics are presented.

HSL 1603 Theory of Play 2 Q.H.

The nature of play and a study of cross-cultural patterns of play. An investigation of selected theories of play, including Huizinga, Caillois, Sutton-Smith, and Lee.

HSL 1604 Group Dynamics II 2 Q.H.*

(Prereq. HSL 1253)

Exposure to outdoor activities typical of outdoor adventure programs. Exposure to practices and philosophies of Project Adventure, Outward Bound, and national outdoor leadership schools, with an emphasis on skills teaching. Resident experience required.

HSL 1605 Basic Athletic Training 3 Q.H.

The training and conditioning procedures in athletic programs; special emphasis on the prevention of athletic injuries; roles of the trainer, athlete, coach, and health service.

HSL 1606 Perceptual-Motor Learning 4 Q.H.

(Prereq. PSY 1111 or equivalent)

A focus on the way information processing is involved in perceptual-motor learning and performance. Basic research data are applied to learning and executing skills in a variety of sports settings.

HSL 1607 Measurement and Evaluation 4 Q.H.

Construction use, selection and interpretation of evaluative tools applicable to physical education; elementary statistical methods.

HSL 1608 Clinical Athletic Training 2 Q.H.

(Prereq. HSL 1605)

The student athletic trainer's introduction to clinical experience with an opportunity to practice the various skills for evaluation and treatment of the injured athlete.

HSL 1609 Advanced Athletic Training 4 Q.H.

(Prereq. HSL 1605)

The advanced preparation and utilization of conditioning programs and their administration for prevention and care of injuries associated with competitive athletics.

HSL 1610 Anatomy and Physiology II 4 Q.H.

(Prereq. HSL 1261)

Gross anatomy and physiology of the human cardiovascular, respiratory, digestive, urinary, and endocrine systems. Metabolism, calorimetry, and other applied topics will also be covered.

HSL 1611 Kinesiology II 4 Q.H.

(Prereq. HSL 1262)

A continuation of Kinesiology I, with emphasis on the mechanical aspects of human motion. The internal and external forces acting upon a human body and the effects produced will be examined.

HSL 1612 Physiology of Exercise 4 Q.H.

(Prereq. HSL 1610)

Study of the immediate and long-range effects of exercise upon the human body with emphasis on the cardiovascular and respiratory systems, muscles, and metabolism; physical fitness, body composition, and selected components of motor performance-assessment techniques and training principles. Introduction to indirect open-circuit calorimetry and EKG monitoring.

*Lab fee required.

HSL 1613 Laboratory in Exercise Testing and Prescription 4 Q.H.

(Prereq. HSL 1612)

Practicum in assessment of physical work capacity, cardiac function, muscular strength, muscular endurance, flexibility and body composition; prescription of exercise programs used to improve the above functions: volunteer work as an exercise test technician and exercise leader in a fitness class.

HSL 1614 Electrocardiography 4 Q.H.

(Prereq. HSL 1612)

A study of basic and intermediate electrocardiography including cardiac function, lead systems, rate, rhythm, axis, infraction, ischemia, hypertrophy, effects of cardiovascular drugs, and purposes and principles of exercise testing.

HSL 1615 Critical Teaching Skills 4 Q.H.

(Prereq. HSL 1258 or HSL 1259)

Course offers analysis of direct and indirect, verbal and nonverbal teaching methods for classroom and activity teaching, using techniques such as microteaching, peer teaching, and simulation. Techniques for measuring teacher behavior, such as interaction analysis, are studied and analyzed. A laboratory experience in an education setting is an essential activity.†

HSL 1616 Curriculum Development 3 Q.H.

Course focuses on basic foundations of curriculum development stressing fundamental principles and guides to curriculum organization, format, and evaluation. Course material includes experience using the taxonomies of education objectives and survey of existing curricula and current curriculum trends.

HSL 1617 Administration of Physical Education

4 Q.H.

The organization and administration of programs in physical education, with emphasis on elementary and secondary school programs.

HSL 1618 Principles of Physical Activity for the Older Adult 4 Q.H.

Principles of physical activity and the organization of physical activity programs for the elderly in public and private agencies are studied. Research and practical applications of theory are required.

HSL 1619 Adapted Physical Education II

4 Q.H.

(Prereq. HSL 1264)

Assessment, diagnostic, and prescriptive procedures in special-needs physical education programs. Emphasis is on modification techniques and integration of programming in accordance with legislative guidelines. Practicum experiences in special-needs settings are included.

† Designed to satisfy partially pre-practicum requirements for teacher certification.

HSL 1620 Comparative Physical Education

3 Q.H.

(Prereq. HSL 1257 or ED 1312)

Analysis of systems of physical education and sport in selected countries and their interrelations with the larger cultural framework.

HSL 1621 Dance in Cultural Perspective

4 Q.H.

A survey of dance from ancient times to 1900 with the focus on the evolution of dance as a theatre art.

HSL 1622 Supervised Field Experience

12 Q.H.

(Prereq. Senior status in major or permission of instructor)

Course offers assignment in a field setting related to the student's area of concentration within the physical education curriculum, including observation and performance of professionally related skills under the guidance of a cooperating field professional and a college supervisor. To be taken by physical education majors who are not in a teacher certification program.

HSL 1623 Supervised Student Teaching

(Practicum)

12 Q.H.

Course provides a minimum of at least 300 clock hours in an approved school, with clear instructional responsibilities for at least half of the time and full teaching responsibilities for a substantial period of time under the guidance of a certified cooperating teacher and college supervisor. The assignment must be at the level of teacher certification sought (K-9 or 5-12) and include coaching and/or intramural organization and supervision, evaluation conferences, and seminars. Students can prepare themselves for Certificate No. 30, Teacher of Physical Education, as granted by the Commonwealth of Massachusetts.†

HSL 1863 TAC - Special Problems

2 Q.H.

(Prereq. Permission of instructor)

Designed as directed study in analysis and coaching of a sport or activity not offered by the department or in special scheduling situations.

HSL 1864, HSL 1865, HSL 1866 Special Programs

2, 3, or 4 Q.H.

(Prereq. Permission of instructor)

The course focuses on independent investigation of physical education in an area of each student's interests. The investigation will be supervised by an appointed faculty member and will culminate in a formal written report.

HSL 1202 Recreational Sports Leadership

2 Q.H.

The exploration of teaching techniques involved in team, dual, and individual sports. Methods, such as the part-whole and whole-part, are presented and investigated to establish relevance to each of the sports areas under study. Students are

†Teacher certification requirements available in 106 Dockser Hall.

given the opportunity to develop skills in planning units and individual lessons. In addition, students are expected to apply practical experience by teaching one lesson in each of the sports areas studied.

HSL 1203 Survey of Aquatics 2 Q.H.

Exploration of various aquatic events that may enhance recreational swimming programs. Students are given the opportunity to develop planning, execution, and evaluation techniques for each area of study. In addition, students may attend and evaluate a planned water event. Areas of study include party events for all ages, competitive swimming and diving, synchronized swimming, water polo, and events for the atypical.

HSL 1204 Photography 1 Q.H.

A basic study including the history of photography, types of cameras, use of black-and-white and color film; use of F-stops and shutter speeds, dark-room equipment, supplies and procedures. Field trips exploring photography techniques and dark-room experiences are included.

HSL 1205 Introduction to Winter Skills 1 Q.H.

Course investigates several winter sports, their origins and history, current population demands, and future trends. Various types of equipment and their use, as well as special health and safety considerations for winter sports, are discussed. Sports to be studied include cross-country skiing, snowshoeing, skating, tobogganing, and snowmobiling.

HSL 1208 Arts and Crafts for Leisure 2 Q.H.

The course provides students the opportunity to discover, acquire, and adapt various craft skills such as inexpensive crafts, sculpture, painting, etc. The planning and programming of craft sessions are also covered.

HSL 1209 Basic Rockclimbing and Rappelling 2 Q.H.*

A training program designed to introduce potential rockclimbing leaders to all necessary facets of the sport. While successful completion of the program does not qualify a student to lead rockclimbing trips, it may help students to gain a better perspective of both the necessary skills and the leadership role in rockcraft. The program consists of a weekend of practical experience and two introductory discussion sessions at Bouvé. Program areas include activities and information regarding basic climbing and rappelling experience, knots, safety, delaying, equipment usage and care, and leadership. The lab fee includes lodging, meals, equipment use, and instruction.

HSL 1212 Basic Canoeing 2 Q.H.

Instruction leading to an opportunity to qualify for Red Cross basic canoeing certification. Classes are held at the Warren Center and include theory and practical experience.

HSL 1213 Basic Sailing 2 Q.H.

Instruction leading to an opportunity to qualify for Red Cross basic sailing certification. Classes are held at the Warren Center and include theory and practical experience.

HSL 1220 Foundation of Leadership in Leisure Service 4 Q.H.

The course offers study of the basic principles of leadership relevant to the fundamentals of leadership in leisure services. Subjects include leadership styles, motivation, task sequencing, behavioral objectives, adaptation, and evaluation.

HSL 1221 Introduction to Recreation and Leisure 3 Q.H.

The course provides an overview of the recreation and leisure service field with emphasis on history, scope, rationale, setting, programs and services, basic trends and issues, and future considerations. The course explores the basic elements of the recreation and leisure service field as they relate to society, the leisure profession, and the individual.

HSL 1222 Leisure Awareness and Leadership Camp 2 Q.H.*

One-week resident camp experience at the Warren Center, which emphasizes experiential learning, skill development, group processes and personal reflection. The purpose of the Leisure Awareness and Leadership Camp is to maintain the tradition upon which a philosophical foundation of leisure awareness and education is constructed. To be effective in a challenging recreation leadership role, one must first become aware of what these concepts mean personally and then concentrate on developing facilitation knowledge and skills. LALC enables students to become aware of their leadership potential in the profession. Course is required and scheduled to be taken at the conclusion of the freshman year.

HSL 1223 Life/Career Planning 4 Q.H.

This course is designed to help students develop life/career planning skills for use in pursuit of a career in recreation and leisure studies. A variety of careers, co-op job opportunities, and lifestyles of professionals in the field are explored. Students are given the opportunity to assess their own interests, values, needs, and skills, and to develop job-finding skills, including résumé writing and interviewing techniques.

HSL 1280 Foundations of Health Education 2 Q.H.

Provides opportunities for learners to investigate the broad spectrum of career possibilities in community and school health education and to ascertain their potential roles in the field. Philosophy of health education, the conceptual approach, and trends in health education are considered.

*Resident fee required.

*Lab fee required.

HSL 1281 Current Issues in Health 4 Q.H.

Focus is on the development of high-level wellness. Topics may include emotional health, nutrition, fitness, sexuality, drug use, disease, consumer issues, and environmental impacts. Emphasis is placed on the needs of the participants.

HSL 1283 Introduction to Safety 2 Q.H.
(Prereq. HSL 1280)

Introduces the principles and fundamentals of safety education as they relate to people in their environment. Concerns safety as a social problem; considers major accident areas, accident causes, and liability; and analyzes possible solutions to accident problems.

HSL 1284 Instructional Resources 2 Q.H.

Introduction to the use of audiovisual media as educational tools. Production of slide presentations, transparencies, bulletin boards, displays, etc., is included. Opportunities are provided for experiences in operating selected equipment.

HSL 1285 Health Concerns for Youth 4 Q.H.

Application of health concepts to assist youth in reaching a higher level of wellness through preventive measures. Significant health concerns are identified and dealt with as they relate to health professionals, teachers, and adults.

HSL 1286 Nutrition 4 Q.H.
(Prereq. Chemistry)

This course offers the student the opportunity to learn and evaluate nutrition information both as a consumer and future educator. The chemical, biological, and physiological basis of nutrition are explained.

HSL 1400 Group Dynamics 3 Q.H.

The study of human behavior in groups is approached through lectures, reading, and structural group experiences. Major areas of concentration include communication, leadership, decision making, and evaluation of the group process.

HSL 1401 Program Planning in Recreation 4 Q.H.

The course focuses on examination of program content, leadership, administration, and facilities associated with the effective delivery of leisure services under the auspices of public, private, religious, industrial, and voluntary agencies.

HSL 1402 Leisure and Lifestyles 4 Q.H.

The course focuses on aspects contributing to lifestyles and the role of leisure. Specific lifestyles are examined through case studies and guest presentations. Students have the opportunity to examine the effect of leisure on their present lifestyles and future aspirations.

HSL 1403 Concepts of Leisure: Sociopsychological Perspectives 4 Q.H.

The course focuses on exploration of the various sociopsychological perspectives of leisure and the relations of mores, social structure, roles, values, and personality to leisure expression. Investigation of other pertinent social and environmental factors that contribute to the phenomenon of leisure is included.

HSL 1406 Internship Seminar 1 Q.H.

Course offers preparation for professional field assignment in a leisure service setting. Focus is on identification and assessment of student career goals, analysis of previous volunteer and/or employment experience, professional involvement, and facilitation of the internship placement process.

HSL 1407 Internship in Recreation and Leisure Services 16 Q.H.

Professional field assignment in leisure service settings designed to prepare students for professional career choices. Supervision by faculty, conferences with professional staff, and seminars. Ten-week internship.

HSL 1408 Research Methods 4 Q.H.

Study of basic statistics, the use of experimental and quasi-experimental design, sampling, instrumentation, data collection, and analysis as applied in recreation and leisure studies.

HSL 1409 Research Applications 4 Q.H.

The course examines the use of research methods in selected professional applications ranging from the ongoing research of departmental faculty to student-originated studies.

HSL 1410 Senior Seminar in Contemporary Issues and Trends in Recreation and Leisure 4 Q.H.

Through extensive literature review, the course offers examination and discussion through extensive literature review of contemporary issues and trends in the field of recreation and leisure. Focus is on critical aspects of leisure services: legislation, consumer advocacy, professional development, research, and innovations for the improvement of service delivery.

HSL 1420 Urban Recreation 4 Q.H.

The course provides an examination of the different cultural and sociological patterns of various ethnic groups who live in an urban setting. Various recreational activities are suggested for each group. Other pertinent recreational issues common to the urban community are studied.

HSL 1421 Administration of Recreation and Parks 4 Q.H.

The course focuses on administration procedures of tax-supported recreation and park operations. Concentration on legality commissions, area and facility design, personnel policies, and problem solving related to administration and management.

HSL 1422 Program Evaluation in Recreation**4 Q.H.**

The course examines comprehensive systems for evaluating program effectiveness as it relates to the consumer of recreation services. Major emphasis placed on developing an evaluation system for an agency of the student choice. Case studies are drawn from the public, nonprofit, and commercial sectors.

HSL 1423 Commercial Recreation Marketing**4 Q.H.**

Course offers an examination of commercial and private sector recreation services. Case studies workshops, and practical problems are related to managing leisure opportunities for resorts, country clubs, theme parks, tourism, sports clubs, manufacturing and merchandising, and industrial recreation.

HSL 1425 Leisure and the Community School**4 Q.H.**

The course provides exploration (through class lectures, discussions, readings, and on-site visitations) of the theoretical, operational, and motivating aspects of the community school concept. An opportunity to investigate the complex role played by leisure in the community school.

HSL 1426 Budget Analysis**4 Q.H.**

The course focuses on the study and use of analytical techniques that can improve budgeting decisions. Topics include cost-effectiveness and benefit-cost analysis, efficiency measures, pricing, forecasting, and present-value analysis for solution of capital and operating budget problems in the nonprofit and commercial recreation sectors.

HSL 1440 School Camping**3 Q.H.**

(Prereq. HSL 1444 or permission of instructor) Investigation of outdoor education as it applies to school camp organization, administration, program planning, and educational significance. Each student is required to participate in a one-week supervised practical experience at a designated school camp.

HSL 1441 Camp Administration**3 Q.H.**

The course offers investigation of camp management guidelines including site development, health and safety, hiring and staff training, public relations, American Camping Association standards, legal regulations, organization within camps, programs, and other selected administrative aspects.

HSL 1442 Leadership and Organization of Wilderness Recreation**4 Q.H.**

The course offers indepth investigation of the leadership, organization, planning, implementation, and evaluation of outdoor pursuits. Particular emphasis is placed on multiday experiences in remote or wilderness setting. An extended outdoor practicum in a wilderness setting is required.

HSL 1443 Interpretation of Ecological and Social History**4 Q.H.**

The course examines the employment of site visitations and problem-solving methods to investigate human interaction with and manipulation of the physical, biological, and social environment. The course provides the opportunity to acquire knowledge of ecosystem aspects which can be applied to environmental interpretation and decision-making sectors of ecosystem and recreation management.

HSL 1444 Environmental Education**4 Q.H.**

The study of the philosophy and history of environmental education in political, social, and educational movements. Exploration of methods of developing, teaching, and evaluating environmental education curricula applicable to schools, camps, parks, and environmental centers.

HSL 1445 Seminar on Environmental Issues and Legislation**4 Q.H.**

The course offers study of the development of attitudes toward the environmental and critical investigation of the history of the environmental movement. Investigation of current environmental issues and laws affecting our ecosystem and lifestyles through integrating theories from sociology, ecology, economics, and politics. Exploration of degrees of ecological and social constraints on future growth and definition of alternative futures.

HSL 1446 Elements of Outdoor Recreation Planning**4 Q.H.**

The course offers exploration of the nature and significance of the outdoor recreation experience and how our natural resources can optimally meet people's needs. Focus is on the elements of outdoor recreation planning; identification, evaluation, assessment, and implementation. Relation of social groups, natural resources, and environmental concerns to outdoor recreation planning are included.

HSL 1460 Process of Aging**3 Q.H.**

The course covers the study of phases of aging; discussion of the physical, social, and emotional changes and problems that face the aged; the study of types of services offered to senior citizens, and the sources of funds allocated to sponsor such services. The role of recreation is emphasized.

HSL 1461 Camping and Outdoor Education for the Handicapped**3 Q.H.**

Innovations in outdoor learning with an emphasis on wellness, the American Indian, outdoor adventure activities, and a holistic perspective on the individual with a disability. Observations and practical applications are included.

HSL 1462 Leisure Counseling**4 Q.H.**

This course provides students an opportunity to develop fundamental group counseling skills through the use of specialized strategies and tradi-

tional verbal counseling techniques. Major focus is on lifestyle awareness counseling.

HSL 1463 Overview of Physical Disabilities

4 Q.H.

The course offers a holistic and humanistic approach to people with physical disabilities including amputations, traumatic conditions, sensory impairments, neurological, orthopedic, and cardiovascular disorders. Rehabilitation procedures and treatment, adjunctive therapies, prosthetics, orthotics, assistive, devices and techniques, and reentry into the community from the individual, familial, and societal perspectives are discussed.

HSL 1464 Program Planning in Therapeutic Recreation

4 Q.H.

The course examines advanced planning of comprehensive therapeutic recreation services. Focus is on systems approach to planning for individuals and groups. Included are an intensive examination of the philosophy of therapeutic recreation; the study of the functional elements of activities, current legislation, and standards for service delivery.

HSL 1465 Therapeutic Recreation with Developmentally Disabled Persons

4 Q.H.

Course offers a review of major phases of normal growth and development for the purpose of understanding the causes and impact of developmental disabilities. Emphasizes role of play experiences in achieving sequentialized skills and concepts, practices and procedures employed in program design.

HSL 1466 Foundations of Psychiatric Services in Therapeutic Recreation

4 Q.H.

(Prereq. Permission of the instructor)

The course focuses on orientation to the foundations of mental health and variables affecting mental illness; examination of various psychiatric disorders and treatment modalities and the role of activity therapy in the treatment of mental illness; review of contemporary trends in psychiatry that pertain to therapeutic recreation.

HSL 1467 Social and Psychological Impacts of Illness and Disabilities

4 Q.H.

(Prereq. HSL 1463)

Exploration of relevant issues related to disability such as societal understanding of disability, handicapping conditions, adjustment, social networks, and the therapeutic use of self through a mixture of lectures, group discussion, guest speakers, and films. Examination of self in the role of change agents and care providers.

HSL 1500 Mental Health

4 Q.H.

An investigation of emotional health and well-being as they relate to total health with emphasis on factors that influence emotional behavior. Various approaches to emotional health in public school programs are included.

HSL 1502 Communicable and Degenerative Diseases

4 Q.H.

The disease immunity process, with emphasis on prevalent communicable diseases in the United States today and their transmission; chronic diseases, cardiovascular diseases, cancer, diabetes, and other constitutional and degenerative diseases and disorders that affect the nation's health. Predominant themes are personal health attitudes and behaviors. Personal health responsibility is analyzed.

HSL 1503 Human Sexuality and the Family

4 Q.H.

(Prereq. ED 1103)

Sexuality from a physical, psychological, social, historical, and cultural perspective. Needs and concerns about sexuality at various stages in life including a variety of approaches to sex education within schools, community, and the family.

HSL 1504 Longevity and Aging

4 Q.H.

Study of the biological, psychological, and sociological aspects of human aging. Consideration is given to the importance of one's current lifestyle in relation to the phenomenon of longevity and the quality of life.

HSL 1506 Evolving Patterns of Community Health Education

4 Q.H.

Principles of community health, with emphasis on contemporary local, national, and international organizations for meeting health problems; health care delivery, consumer health issues, environmental health, community resources, and the role of health education in the community.

HSL 1507, HSL 1508 Seminar

(each) 2 Q.H.

(Prereq. for HSL 1507 is ED 1306)

(Prereq. for HSL 1508 is HSL 1507)

Discussion of current problems and new developments as they relate to health education in school and in a variety of community settings. An introduction to research and scientific writing, culminating in a research project in an area of special interest, is included.

HSL 1509 Organization and Administration of School and Community Health Education

4 Q.H.

Principles and methods of organization and administration of school and community health education programs; ethics, personnel, budget, facility management, and priorities.

HSL 1510 Health Counseling

4 Q.H.

The identification of physical, mental, emotional, and social health problems; remedial procedures; and counseling techniques to aid health educators to deal more intelligently with various health problems.

HSL 1511 Independent Study I 1 Q.H.**HSL 1512 Independent Study II 2 Q.H.****HSL 1513 Independent Study III 3 Q.H.****HSL 1514 Independent Study IV 4 Q.H.**

Designed to provide the student with an opportunity for concentrated planning and research. In-depth study may be carried out in a topic area of health, sport, or leisure. Outline of proposed study must be submitted for departmental approval.

HSL 1515 Public Health 4 Q.H.

History and overview of public health agencies and the organization of services for meeting community health needs at the local, state, federal, and international levels. Focus is on today's major health problems.

HSL 1516 Drug Use and Abuse 4 Q.H.

An exploration of the use and abuse of drugs in our society, including rescription and OTC drugs, alcohol, and smoking. Physiological, psychological, and sociological effects of drugs on humans are considered.

HSL 1517 Death, Bereavement and Suicide 4 Q.H.

An interdisciplinary approach to the contemporary issues involved in death and bereavement. Death is examined from a lifecycle approach, including the dynamics of grief and mourning. Suicide is examined as it relates to self-concept and stress.

HSL 1518 Community Health 4 Q.H.

Focus is on today's major community health prob-

lems, with an overview of the organization of services for meeting community health needs at the local, state, federal, and international levels.

HSL 1520 Student Teaching 12 Q.H.
(Prereq. HSL 1585)

Observation and practical teaching experience in public school health education programs. Supervision and evaluation by personnel, in cooperating schools and by Boston-Bouvé College of Human Development Professions faculty; seminars.

HSL 1521 Field Experience 12 Q.H.
(Prereq. HSL 1585)

Observation and practical field experience in selected community health education settings. Supervision and evaluation by personnel, in cooperating schools and by Boston-Bouvé College of Human Development Professions faculty; seminars.

HSL 1585 Teaching Procedures/Curriculum In Health Education in School and Community 4 Q.H.

The prospective health educator is introduced to health education curriculum, techniques of planning, and pertinent methods and materials in school and community health education.

HSL 1801, HSL 1802, HSL 1803, HSL 1804 Independent Study

Under the guidance and direction of a program adviser, students are given the opportunity to conduct projects related to their professional interests. Credit of one, two, three, or four quarter hours.

Physical Therapy

PTH 1114 Introduction to Physical Therapy 2 Q.H.

The course provides orientation to the field of physical therapy and its role in the health professions; theory and practice in applied body mechanics and basic procedures related to patient management.

PTH 1115 Introduction to Physical Therapy 2 Q.H.

(Prereq. MTH 1107, PHY 1201, PHY 1501, CHM 1112, BIO 1253, and BIO 1141)

The course provides practice in the preparation of patients and equipment for various treatment procedures. Theory demonstration and practice in heat, light, and hydrotherapy.

PTH 1310 Clinical Gross Anatomy 6 Q.H.*
(Prereq. BIO 1254 and BIO 1255)

The course covers the structure and function of the human body with particular emphasis on the

skeletal, muscular, nervous, and cardiovascular systems. Clinical applications. Lecture and laboratory.

PTH 1315 Physiology for Physical Therapists 5 Q.H.

(Prereq. BIO 1254, BIO 1255, and PTH 1115)

The course covers neuromuscular, cardiovascular, and respiratory physiology applied to physical therapy.

PTH 1320 Physical Therapy 1 2 Q.H.
(Prereq. BIO 1255, PTH 1115, and BIO 1254)

Course offers theory, demonstrations, and practice in massage integrated with other treatment procedures. Case studies.

PTH 1325 Clinical Medicine I 4 Q.H.
(Prereq. BIO 1254 and BIO 1255)

The course covers general medicine, laboratory medicine, and pathology as related to conditions commonly treated by physical therapists.

*Including lab.

PTH 1330 Clinical Kinesiology 5 Q.H.*

(Prereq. PTH 1310 and PTH 1315)

The course covers musculoskeletal function with emphasis on the mechanical and physiological factors involved. Clinical applications to normal and pathological movements.

PTH 1335 Physical Therapy II 3 Q.H.

(Prereq. PTH 1310, PTH 1315, and PTH 1320)

The course covers evaluation procedures: theory, demonstration, practice, and planning.

PTH 1340 Physical Therapy III 4 Q.H.

(Prereq. PTH 1310, PTH 1315, PTH 1320, and PTH 1350)

This course covers basic therapeutic exercise: theory, demonstration practice, and planning.

PTH 1345 Clinical Medicine II 3 Q.H.

(Prereq. PTH 1310, PTH 1315, and PTH 1325)

Orthopedic conditions and their medical, surgical, and physical therapy treatment.

PTH 1350 Clinical Psychiatry 3 Q.H.

(Prereq. PSY 1112; physical therapy students only)

Review of psychiatric categories, including consideration of etiology and treatment. Psychosocial variables significant in the management of patients with whom the physical therapist is concerned.

PTH 1355 Physical Therapy IV 3 Q.H.

(prereq. PTH 1330, PTH 1335, PTH 1340, and PTH 1345)

Course covers theory, demonstration, and practice in prosthetics, orthotics, and advanced functional training of spinal-cord-injured patients.

PTH 1360 Physical Therapy V 4 Q.H.

(Prereq. PTH 1330, PTH 1335, PTH 1340, and PTH 1345)

Theoretical basis and clinical application of the neurophysiological approaches to treatment: Brunnstrom, Rood, and proprioceptive neuromuscular facilitation techniques.

PTH 1365 Neuroanatomy 4 Q.H.*

(Prereq. PTH 1340)

Morphology and function of the human nervous system. Abnormalities of structure and function of the nervous system. Lecture and laboratory.

PTH 1370 Clinical Seminar 2 Q.H.

(Prereq. PTH 1355 and PTH 1350)

Selected topics related to clinical aspects in physical therapy. Interpersonal relationships, ethics, and teaching methods.

PTH 1375 Physical Therapy VII 2 Q.H.

(Prereq. PTH 1335, PTH 1345, and PTH 1365)

The course covers theory, demonstration, and practice in electrical testing and treatment procedures.

*Including lab.

PTH 1380 Supervised Clinical Education I**5 Q.H.**

(Prereq. Satisfactory attainment in all prior professional courses)

An introduction to clinical experience providing the student with opportunities to practice various skills in the evaluation and treatment of patients under supervision. Emphasis is placed on an understanding of treatment planning. Five weeks during Quarter 9 of the junior year in the Boston area.

PTH 1385 Clinical Medicine III 3 Q.H.

(Prereq. PTH 1345, PTH 1365, and PTH 1325)

The course focuses on pediatrics and neurology as related to conditions commonly treated by physical therapists.

PTH 1390 Physical Therapy VI 3 Q.H.

(Prereq. PTH 1330, PTH 1335, and PTH 1340)

Respiratory physical therapy; theory, demonstration, and practice in the management of medical and surgical chest conditions. Introduction to respiratory mechanical equipment and cardiopulmonary resuscitation.

PTH 1395 Physical Therapy V (PTH 1360 continued) 1 Q.H.

(Prereq. PTH 1330, PTH 1335, PTH 1340, and PTH 1345)

Topics include neurodevelopmental treatment, neurophysiological theory, and clinical application of facilitation and inhibition techniques to enhance motor control as advocated by the Bobaths.

PTH 1400 Administration 4 Q.H.

(Prereq. PTH 1380)

Concepts in administration and management applied to physical therapy.

PTH 1405 Research for Physical Therapy 4 Q.H.

(Prereq. Satisfactory attainment in all prior professional courses)

The course covers introduction to research design, analysis of scientific and medical literature, and preparation of an independent research proposal; electromyography.

PTH 1410 Physical Therapy VIII 3 Q.H.

(Prereq. Satisfactory attainment in all prior professional courses)

Analysis and comparison of methods of physical therapy evaluation and treatment, with special emphasis on therapeutic exercise. Treatment planning for various problems, with emphasis on rationale and selection of treatment alternatives.

PTH 1415 Supervised Clinical Education II

(Prereq. Satisfactory attainment in all prior professional courses)

Advanced clinical education providing the student with further opportunities to practice various phases of physical therapy under supervision in preparation for assuming the role of a qualified

physical therapist. Assignments in Massachusetts and other states. Twelve weeks during senior year. Required for graduation from the physical therapy program.

PTH 1420 Physical Therapy in the Health Care System 3 Q.H.

(Prereq. PTH 1370 and PTH 1380)

Concepts of rehabilitation and community health. Emphasis in on the role of the physical therapist as a member of the health team. Class discussion and seminar.

PTH 1425 Psychosocial Aspects of Illness

3 Q.H.

(Prereq. PTH 1370 and PTH 1380)

The course examines interpersonal relationships among patients, families, health professionals, and society, with reference to the impact of and reaction to illness.

PTH 1450 Investigative Studies

6 Q.H.

(Prereq. Satisfactory attainment in all prior professional courses)

The course covers selected modules related to current practice in physical therapy; completion of research project.

Speech-Language Pathology and Audiology

SLA 1100 Basic Manual Communication Systems

4 Q.H.

Course focuses on the use of manual communication systems in deaf education (Manual English, SEE, and Signed English). Discussions will cover the goals and assumptions underlying these systems, their relation to American Sign Language and English, and the application of these systems in educational and clinical settings. Instruction is provided in introductory level English Sign Language.

SLA 1101 Introduction to Speech and Hearing

4 Q.H.

Course offers an overview of disorders of speech and hearing and their treatment, and a review of normal speech and hearing development. Clinical observations of persons with speech, language, and hearing disorders are required.

SLA 1200 Hearing Science

4 Q.H.

(Prereq. SLA 1101)

Basic concepts related to the physics of sound are presented, followed by an in-depth study of the anatomy and physiology of the normal hearing mechanism. In addition, basic principles of psychophysics of audition are discussed.

SLA 1201 Anatomy and Physiology of Vocal Mechanisms

4 Q.H.

(Prereq. SLA 1101)

Course offers an in-depth study of the static structure, musculature, and physiology of the speech mechanism. Current research in speech physiology is emphasized.

SLA 1300 Developmental Semantics and Syntax

4 Q.H.

(Prereq. SLA 1101)

Course provides an analysis of the emerging semantic and syntactical aspects of language in normal and atypical children, with emphasis on discussion of current theory and research in language acquisition. Clinical observations of chil-

dren with normal and atypical language patterns are required.

SLA 1301 Phonetics and Developmental Phonology

4 Q.H.

(Prereq. SLA 1101 and SLA 1201)

Course offers a basic training in auditory recognition and symbolization of phonemes and allophones in major American dialects. Static and dynamic articulatory descriptions are stressed. Course also includes a review of the developmental sequence of phonemic acquisition.

SLA 1302 Phonemic Disorders

4 Q.H.

(Prereq. SLA 1201, SLA 1300, and SLA 1301)

Course provides a practical and theoretical examination of the phonemic disorders and their etiology; diagnostic tools for evaluation and methods of treatment. Clinical observations of persons with phonemic disorders are required.

SLA 1303 Introduction to Audiology

4 Q.H.

(Prereq. SLA 1200)

Course focuses on the basic techniques of audiometric testing and hearing conservation, including a review of basic hearing sciences and a pre-practicum and lab experience in hearing testing.

SLA 1400 Speech Science

4 Q.H.

(Prereq. SLA 1101 and SLA 1200)

Course offers an examination of the basic sciences involved in speech and audition, including in-depth study of the analysis of sound and the acoustic composition of speech. Emphasis is placed on a review of current theory and research in speech reception, perception, and production.

SLA 1401 Fluency Disorders

4 Q.H.

(Prereq. SLA 1201)

Course offers a comprehensive study of the various theories and symptomatology of stuttering from the earliest historical references through the nineteenth and twentieth centuries. Clinical observations are required.

SLA 1402 Diagnostic Techniques 4 Q.H.
(Prereq. SLA 1300, SLA 1301, SLA 1302)

Course offers a presentation and review of diagnostic tests and procedures in speech-language pathology. Emphasis is on the parent interview; the oral examination; and the appraisal of phonemic, phonatory, language, fluency, and auditory disorders. Observations of diagnostic evaluations are required.

SLA 1403 Orientation to Clinical Practices 4 Q.H.
(Prereq. Senior status)

This is a pre-practicum course designed to introduce students to the policies of ASHA; to offer exposure to related health professions; to discuss the influence of state and federal legislation upon the delivery of speech-language and hearing services; to examine the role of the clinical supervisor; and to practice writing clinical goals and lesson plans.

SLA 1404 Introduction to Psychoacoustics 4 Q.H.
(Prereq. SLA 1400 or SLA 1200 or SLA 1303)

This course explores the physics of sound and the psychological aspects of hearing with an emphasis on clinical applications. Topics include threshold, loudness, pitch, adaption, and auditory localization. The prerequisite may be waived only with permission of the instructor.

SLA 1500 Psychoacoustics Laboratory 4 Q.H.
(Prereq. SLA 1404)

This course provides practical application of topics discussed in SLA 1404. Students are required to re-create some of the most interesting of the classical psychoacoustics experiments. The prerequisite may be waived only with permission of the instructor.

SLA 1501 Clinical Practice and Seminar 4 Q.H.
(Prereq. SLA 1403)

Course provides full-time participation in a University-arranged and supervised school program designed to provide the student with initial involvement in the clinician-client relationship and an opportunity to demonstrate, evaluate, and develop clinical skills.

SLA 1800 Directed Study 4 Q.H.
(Prereq. Permission of instructor)

This course is provided for the student whose unique academic needs or interests cannot adequately be satisfied in any of the scheduled courses of the department. Preparation: Approval of the supervising faculty member, chairperson, and the Dean's Office of the Boston-Bouvé College of Human Development Professions. Approval forms must be submitted to the Dean's Office during the quarter prior to registration for the Directed Study.

Pharmacy

PAH 1135 Professional Dynamics in the Health Care Delivery System 4 Q.H.

An examination of the evolution of the American health care delivery system with emphasis on current aspects of how health care is delivered, how it is financed, where it is delivered, and who delivers it. Present and future influences in health will be discussed. Introduction to unique and collective health professional roles and responsibilities, humanistic/behavioral dimensions of health care, professional organizations, and professionalism.

PAH 1202 Anatomy-Physiology I 5 Q.H.*
(Prereq. CHM 1122 and BIO 1107)

This course covers structure and function of cells, tissues, and organs, including the muscular, immune, and nervous systems. The laboratory includes human skeletal anatomy and cat dissection. Both the lecture and laboratory sections of this course are oriented to students in the health professions.

PAH 1204 Anatomy-Physiology II 5 Q.H.*
(Prereq. PAH 1202 or permission of instructor)

The course covers structure and function of the various life-supportive systems not covered in the first quarter: cardiovascular, endocrine, gastro-

intestinal, pulmonary systems. Laboratory is devoted to basic principles involved in understanding the functioning life systems and cell function.

PAH 1280 Biochemistry 4 Q.H.
(Prereq. CHM 1264, CHM 1265)

This introductory course in biochemistry deals with the structures, functions, and metabolism of amino acids, proteins, carbohydrates, lipids, and nucleic acids. Mechanisms of enzyme reactions, enzyme kinetics, vitamins, biological oxidation reduction reactions; and bioenergetics are discussed, as well as various inborn errors of metabolism.

PCL 1101 Drugs — Their Uses and Actions 4 Q.H.

Topics include background, classification, dose responses, untoward side effects, uses, and commercial preparations of a broad series of drugs. (Not open to pharmacy, respiratory therapy, or nursing majors).

PCL 1102 Poisons 4 Q.H.
(Prereq. Nonpharmacy majors)

This course presents an organized classification

*Lab fee required.

of chemicals (natural and synthetic) capable of potential harm to humans and their environment. Included are the effects, uses, treatments, and designs of poisons.

PCL 1301 Basic Pharmacology 3 Q.H.
(Prereq. Permission of instructor)

This course provides students an opportunity to learn the classification, mechanisms of action, and uses of a broad spectrum of therapeutic agents. Dose response and untoward side effects are emphasized.

PCL 1305 Pharmacodynamics 3 Q.H.
(Prereq. BIO 1120, BIO 1255, CHM 1111, and CHM 1112)

This course provides introductory expositions of pharmacologic principles, with the pharmacotherapeutics of drug groups and individual drug substances of particular importance in treatment and diagnosis of disease.

PCL 1309 Pharmacology for the Respiratory Care Practitioner 4 Q.H.

The course provides an orientation to pharmacology, including the scope of pharmacology; definitions; drug standards; drug legislation; names, sources, and active constituents; and pharmaceutical preparations of drugs relating to the respiratory-care practitioner.

PCL 1410 Introduction to Pathology 4 Q.H.
(Prereq. PAH 1202 and PAH 1204)

The course focuses on basic concepts of pathology for the pharmacy student, with emphasis on disease processes and alterations of normal biochemical mechanisms.

PCL 1420 Pharmacology/Medicinal Chemistry II 6 Q.H.

(Prereq. PMC 1418)

Continuation of PMC 1418. An interdisciplinary approach to the fundamental chemical and pharmacological principles of drug action. A discussion of structure-activity relationship, absorption characteristics, metabolic fate, pharmacodynamics, and therapeutic application, principally of those drugs acting at sympathetic and neuroeffector junctional sites.

PCL 1422 Pharmacology/Medicinal Chemistry III 6 Q.H.

(Prereq. PCL 1420)

A continuation of PCL 1420 with special emphasis on drugs affecting the hematopoietic systems, the kidneys, and the endocrine and reproductive systems.

PCL 1450 Pharmacology Laboratory 1 1 Q.H.*
(Prereq. PMC 1418)

Drug actions are observed in intact animals. The signs and symptoms are related to mechanisms of drug action and the integration of physiological systems. A major goal is the consolidation and integration of material previously presented in texts and didactic courses.

*Lab fee required.

PCL 1452 Pharmacology Laboratory II 1 Q.H.*
(Prereq. PCL 1450)

Basic principles of pharmacology and pharmacokinetics are observed, using diverse experimental model systems. Drug action in these model systems demonstrates how pharmacological knowledge is obtained.

PCL 1505 Drug Interactions 4 Q.H.

The basic chemical-physical, pharmacodynamics, pharmacokinetic, physiological, and pathological factors associated with drug interactions are studied. The roles of these factors in the efficacy and safety of therapeutic drug regimens involving major pharmacological classes of drugs are discussed.

PCL 1801 Special Research Project (Pharmacology) (each) 4 Q.H.*

(Prereq. Permission of instructor and program director)

This is a course of directed study or research in pharmacology/toxicology wherein the student may undertake in-depth investigation of an area of specialized interest.

PCL 1802 Special Research Project (Pharmacology) 4 Q.H.*

(Prereq. Permission of instructor and program director)

This is a course of directed study or research in pharmacology/toxicology wherein the student may undertake in-depth investigation of an area of specialized interest.

PCL 1803 Special Research Project (Pharmacology) 4 Q.H.*

(Prereq. Permission of instructor and program director)

This is a course of directed study or research in pharmacology/toxicology wherein the student may undertake in-depth investigation of an area of specialized interest.

PCT 1230 Pharmaceutical Calculations 3 Q.H.

The course provides an introduction to the general scope of pharmacy. Emphasis is on systems of measurement and basic arithmetic calculations as they relate to the practice of pharmacy. Additionally, the student is introduced to statistical analysis and essential mathematical concepts required for subsequent courses in pharmaceuticals.

PCT 1320 Pharmaceutics Laboratory 2 Q.H.
(Prereq. PCT 1350 or concurrent enrollment)

The course focuses on the application of the fundamental principles and techniques of pharmaceutics to the laboratory preparation and use of various pharmaceutical drug products.

PCT 1340 Pharmaceutics 1 4 Q.H.
(Prereq. MTH 1108, PHY 1203, CHM 1265, and PCT 1230)

The course focuses on the study of physiochemical theories and principles and their application to

pharmaceutical systems. Topics include thermodynamics, ionic equilibria, solubility, complexation, interfacial phenomena, rheology, coarse dispersions, diffusion, membrane transport, and kinetics.

PCT 1350 Pharmaceutics II **5 Q.H.**
(Prereq. PCT 1340)

The course focuses on the application of the fundamental principles of physical pharmacy to the formulation of pharmaceutical preparations. Emphasis is on pharmaceutical dosage forms, including both industrial formulation and extemporaneous compounding.

PCT 1440 Biopharmaceutics/Pharmacokinetics **4 Q.H.**

(Prereq. PAH 1204)

A class designed to acquaint students with biopharmaceutics and basic pharmacokinetics. Topics include dissolution, disintegration, general concept of one- and two-compartment models; linear and nonlinear pharmacokinetics; drug kinetics after intravenous, intramuscular, or oral administration; practical methods of one-compartment model utilizing urinary data; bioavailability; multiple-dosing kinetics; and general approaches to dosage adjustment in disease states.

PCT 1441 Pharmacokinetic Principles in Drug Therapy **4 Q.H.**
(Prereq. PCT 1440)

The course covers the monitoring, development, and modification of drug dosage regimens, and the pharmacokinetic factors influencing the selection of these regimens, for the various therapeutic categories of drugs.

PCT 1801 Pharmaceutics Special Research Project **4 Q.H.***
(Prereq. Permission of instructor(s) and program director)

A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.

PCT 1802 Pharmaceutics Special Research Projects **(each) 4 Q.H.**
(Prereq. Permission of instructor(s) and program director)

A course of directed study or research in pharmaceuticals, wherein the student may undertake in-depth investigation of an area of specialized interest.

PCT 1803 Pharmaceutics Special Research Project **4 Q.H.***
(Prereq. Permission of instructor(s) and program director)

A course of directed study or research in pharmaceuticals, wherein the student may undertake in-depth investigation of an area of specialized interest.

PHP 1301 Pharmaceutical Jurisprudence

4 Q.H.

(Prereq. Permission of instructor)

The course offers a comprehensive analysis and interpretation of laws relating to the practice of pharmacy. Federal and state food and drug laws, narcotics laws, Medicare and Medicaid regulations, and state pharmacy laws are discussed.

PHP 1302 Pharmacy Administration 1 **4 Q.H.**
(Prereq. Permission of instructor)

The course covers socioeconomic aspects of pharmacy: the government's relation to the pharmaceutical industry, trends in contemporary practice, third-party payment plans, macroeconomic impact on the industry, and the interaction of current concepts in pharmacy.

PHP 1303 Interpersonal Skills for Health Professionals **4 Q.H.**

(Prereq. One course in psychology or sociology or anthropology and previous experience working in a health profession; or consent of instructor)

The course is designed to apply the skills of interpersonal communication to situations encountered in various health care settings. Students are provided with an opportunity to learn to integrate specific technical competence with serious concern for personal, social, and cultural factors in illness and health care. Through the use of medical sociology literature, audio-visual materials, case analyses, and personal reflection on actual patient encounters, the students are provided with an opportunity to improve interpersonal communication skills, and to help increase their understanding of practitioner-patient relationships, patient's needs and responses in illness and treatment, and professional behavior in practice settings.

PHP 1304 Social Pharmacology **4 Q.H.**

(Prereq. One course in psychology or sociology or anthropology, or PHP 1303, and previous experience working in a health profession; or consent of the instructor)

An introductory study of drug-taking experiences and behaviors. The course provides an overview of theories and research findings which describe the relationships between personal, social, and cultural factors and drug taking, while comparing and contrasting the social approach with the pharmacological paradigm of drug effects and the medical model of drug use. Through the use of readings, audio-visual materials, and descriptions of personal experiences, the student will examine the varieties of drug experiences, patterns of and reasons for drug taking of all types, and strategies for preventing drug use problems.

*Lab fee required.

PHP 1305 Hospital Pharmacy Management**4 Q.H.**

(Prereq. Senior standing or permission of instructor)

The factors involved in the operations and management of a hospital pharmacy within the context of the total hospital structure.

PHP 1306 Community Pharmacy Management**4 Q.H.**

(Prereq. Senior standing or permission of instructor)

The course focuses on the management requirements for establishing a community pharmacy. A comparative analysis of the prevailing types of organizations, locations, leases, business organization, staffing, plant layout and design, and financial factors.

PHP 1307 Principles of Management**4 Q.H.**

(Prereq. Permission of instructor)

The course covers the fundamentals of business organization with emphasis on the qualitative and legal aspects of management. This course includes an analysis of the marketing structure of the drug trade, forces of organizations, personnel management, and decision-making theory using nonqualitative data.

PHP 1308 Financial Management**4 Q.H.**

(Prereq. Permission of instructor)

The course examines the fundamentals of accounting and finance with emphasis on their application to retailing and community pharmacy management. Accounting systems, analysis of financial statements, budgets, cash flow, taxation, and finance are covered in depth.

PHP 1309 Seminar in Community Pharmacy Management**4 Q.H.**

(Prereq. Permission of instructor)

A discussion course on all phases of community pharmacy operations with extensive utilization of the case method of instruction.

PHP 1401 Drug Information and Evaluation**3 Q.H.**

(Prereq. Fifth-year standing or permission of instructor)

An introduction to the principles and practice of drug information. Material covered includes the levels of practice, the availability of therapeutic reference sources, the use of abstracting and indexing systems, how to respond to drug information questions, and basic statistical data required to help understand the medical and pharmaceutical literature.

PHP 1402 Parapharmaceuticals**2 Q.H.**

Course focuses on the nature and application of various surgical devices, appliances, bandages, and hospital and sickroom supplies in patient care.

PHP 1501 Pharmacy Externship**4 Q.H.**

(Prereq. Fifth-year standing)

A 520-hour (thirteen weeks x 40 hours/week) structured practicum in community pharmacy. The experience includes applied aspects of community pharmacy management; medication dispensing; and patient-oriented services such as prescription and nonprescription medication, consultation, and patient-profile monitoring.

PHP 1502 Clinical Pharmacy Clerkship**15 Q.H.**

(Prereq. PHP 1602)

Students are assigned to a clinical site for five full days per week to observe patient response to medication and to evaluate and advise on all factors that may modify efficacy, safety, and economy of therapy. Campus seminar involves student presentations on current therapeutic topic.

PHP 1503 Professional Practice Laboratory**1 Q.H.**

(Prereq. Senior standing or permission of instructor)

Compounding and dispensing medications. Emphasis is on patient counseling techniques and monitoring for appropriateness of therapy. Prescription compounding involves screening for incompatibilities. Also includes an introduction to the preparation of intravenous solutions.

PHP 1601 Nonprescription Medication**4 Q.H.**

(Prereq. PCT 1440)

A course designed to provide an overall view of the various types of "over-the-counter" medications. The directions and precautions for proper use of these preparations are discussed.

PHP 1602 Clinical Pharmacotherapeutics**5 Q.H.**

(Prereq. PCL 1422 and PCL 1410)

The course covers discussion of common clinical laboratory tests, major disease states, and drug therapy for these conditions.

PHP 1603 Selected Topics in Clinical Pharmacy I**4 Q.H.**

(Prereq. PHP 1602 and permission of instructor)

Designed to help students increase their understanding of selected diseases. Pathophysiology and diagnosis of the illness as well as drug therapy and its relation to patient compliance and education. Provides greater depth than existing clinical pharmacy courses.

PHP 1604 Selected Topics in Clinical Pharmacy II**4 Q.H.**

(Prereq. PHP 1602 and permission of instructor)

This is a course designed to help increase the student's knowledge of selected disease entities. Topics will include pathophysiology and diagnosis of the illness as well as drug therapy and its relation to patient compliance and education. It will be more in depth than existing clinical pharmacy courses.

PHP 1801 Special Research Project 4 Q.H.

(Clinical Pharmacy)

(Prereq. Permission of instructor and program director)

This is a course of directed study or research in clinical pharmacy, wherein the student may undertake in-depth investigation of an area of specialized interest.

PHP 1802 Special Research Project 4 Q.H.

(Clinical Pharmacy)

(Prereq. Permission of instructor and program director)

This is a course of directed study or research in clinical pharmacy, wherein the student may undertake in-depth investigation of an area of specialized interest.

PHP 1803 Special Research Project 4 Q.H.

(Pharmacy Administration)

(Prereq. Permission of instructor and program director)

This is a course of directed study or research in pharmacy administration, wherein the student may undertake in-depth investigation of an area of specialized interest.

PHP 1804 Special Research Project 4 Q.H.

(Pharmacy Administration)

(Prereq. Permission of instructor and program director)

This is a course of directed study or research in pharmacy administration, wherein the student may undertake in-depth investigation of an area of specialized interest.

PMC 1320 Drug Analysis 5 Q.H.*

(Prereq. CHM 1122, CHM 1265)

The course offers a survey of the quantitative analytical techniques applicable to the evaluation and assay of natural and synthetic drugs and their formulations. Emphasis is on chromatographic, spectroscopic, and other instrumental methods, with selected laboratory experiments in the use of these as defined in official compendia.

PMC 1418 Medicinal Chemistry/Pharmacology I 4 Q.H.

(Prereq. BIO 1107, CHM 1265, PAH 1202, PAH 1204)

Course offers an introduction to the principles of pharmacology and medicinal chemistry applied to the discovery of drugs and their therapeutic utility in man; a detailed discussion of drugs affecting the central nervous system, including therapeutic indications, adverse reactions, and mechanisms of action.

*Lab fee required.

PMC 1420 Antinfectives 5 Q.H.

(Prereq. CHM 1265, BIO 1106, BIO 1107, and PAH 1280)

A discussion of modern chemotherapeutic agents used in the therapy of bacterial, viral, fungal, and parasitic infections; emphasis on the selective toxicity, organic chemistry, and medicinal chemistry of these agents. The course also offers an introduction to microbiology and microbial disease and a series of lectures on the development and use of vaccines.

PMC 1440 Medicine Out of the Earth 4 Q.H.

(Prereq. CHM 1265, BIO 1106 and BIO 1107)

This course focuses on the historical use of plants as drugs and their role in the development of modern medicinal and pharmaceutical preparations. Introduction to a variety of modern approaches to the discovery of new drugs is included, with reference to current research programs employing them. Films, slides, and demonstrations illustrate the techniques involved.

PMC 1450 Basics of Nuclear Pharmacy 4 Q.H.

This course comprises the study of the physics, chemistry, and pharmaceutical use of radiopharmaceuticals. Methods for preparing and handling these drugs will be discussed in a practical way, as well as the rationale for their use in diagnosis and therapy.

PMC 1801 Special Research Project (Medicinal Chemistry) 4 Q.H.*

(Prereq. Permission of instructor and program director)

Courses offer directed study or research in one of the medicinal chemistry areas. Students may undertake in-depth investigation of an area of specialized interest.

PMC 1802 Special Research Project (Medicinal Chemistry) 4 Q.H.*

(Prereq. Permission of instructor and program director)

Course offers directed study or research in one of the medicinal chemistry areas. Students may undertake in-depth investigation of an area of specialized interest.

PMC 1803 Special Research Project (Medicinal Chemistry) 4 Q.H.*

(Prereq. Permission of instructor and program director)

Course offers directed study or research in one of the medicinal chemistry areas. Students may undertake in-depth investigation of an area of specialized interest.

Toxicology

TOX 1100 Toxicology Orientation 1 Q.H.

An introduction to toxicology as it relates to clinical, environmental, and regulatory concerns. Includes research principles, clinical toxicology of drugs, water and air pollution concerns. An overview of the field for toxicology and science majors.

TOX 1131 Laboratory Animal Science 4 Q.H. (Prereq. BIO 1260, PAH 1204, and/or permission of instructor)

A comprehensive examination of the role of the laboratory animal in biomedical research. Includes historical and legislative aspects of animal research, basic anatomy and physiology, genetics and nutrition, physiological parameters, animal health and disease, and experimental protocols.

TOX 1300 Clinical Toxicology 4 Q.H. (Prereq. PMC 1418)

The course focuses on principles of toxicology, including FDA requirements relating to new drugs, environmental and other factors affecting the toxicity of therapeutic agents, mechanisms of toxicity, and clinical applications.

TOX 1301 Fundamental Principles of Systemic Toxicology 4 Q.H. (Prereq. PMC 1418)

Course offers a presentation of the principles of toxicology with reference to mode of toxic damage at the cellular and systemic levels. The course includes a discussion of the basic concepts used in evaluation of toxicity and the basic mechanisms through which toxic drug interactions are induced.

TOX 1302 Chemical and Analytical Toxicology 4 Q.H.

(Prereq. PMC 1418 and TOX 1301)

Course offers a presentation of the structure activity approach to toxicology of chemical classes of

compounds. The methodology employed to evaluate the safety of chemicals is presented.

TOX 1320 Toxicology Laboratory 1 Q.H.* (Prereq. TOX 1301, TOX 1302, and a course in statistics)

Principles and experimental methods in toxicology are presented. Animal handling, biochemical techniques, and morphological demonstration of toxic injury are included.

TOX 1321 Biochemical Toxicology 3 Q.H.* (Prereq. TOX 1300, TOX 1301, or TOX 1302)

The objective of this course is 1) to introduce the student to investigational methods for assessing toxicity, 2) to develop the student's ability to analyze and interpret data generated in the lab and in the literature, and 3) to develop technical report writing skills.

Rodents are used as a model for toxic insult. Hepatotoxicity, neurotoxicity, teratogenicity, and other toxic manifestations are examined at the whole animal, whole tissue, and biochemical level.

TOX 1801 Special Topics 4 Q.H.* Selected areas of toxicology will be explored. These may include research, seminars, comparative analysis of data, or faculty-guided programs.

TOX 1802 Special Topics 4 Q.H.* Selected areas of toxicology will be explored. These may include research, seminars, comparative analysis of data, or faculty-guided programs.

TOX 1803 Special Topics 4 Q.H.* Selected areas of toxicology will be explored. These may include research, seminars, comparative analysis of data, or faculty-guided programs.

Health Professions

General Courses

HRA 1310 Hospital Law 2 Q.H.

This course offers an analysis of the legal principles relating to medical and paramedical practice within a hospital environment. The common law and statutory rights of the hospital, practitioner, and patient are discussed.

HRA 1320 Medical Terminology 4 Q.H.

The course offers a study of the language of medicine, including prefixes, suffixes, roots, abbreviations, and disease, operative, and drug terms. Also included are terms related to all area specialties. The terms are studied as they relate to a specific system of the body.

HRA 1321 Basic Medical Terminology 2 Q.H.

This course provides a study of the language of medicine and health care. Emphasis is on disease, procedures, and symptomatic terms and their definitions, word construction, analysis, and application. The student is provided an opportunity to acquire working knowledge of medical terminology.

HRA 1330 Foundations of Medical Science I 3 Q.H.

The course covers major disease problems in our society and modes of treatment. Included are discussion of organized care; diagnosis and treatment; consideration of reproduction, birth, and pediatrics.

*Lab fee required.

HRA 1340 Foundations of Medical Science II
3 Q.H.

(Prereq. HRA 1330)

A continuation of 1330 covering heart, cancer, stroke, blood and lymphatic diseases, accidents,

and musculoskeletal, respiratory, and gastrointestinal diseases.

Medical Laboratory Science

The Medical Laboratory professional courses are taught by University faculty, together with supportive clinical faculty.

MLS 1101 Medical Laboratory Science Orientation 1
1 Q.H.

The course focuses on the history and development of the medical laboratory science profession and includes an introduction to medical terminology.

MLS 1102 Medical Laboratory Science Orientation 2
1 Q.H.

Medical Laboratory Science Orientation 2 is a continuation of Medical Laboratory Science Orientation 1 with the addition of a review of mathematics and metric unit calculations.

MLS 1109 Foundations of Clinical Laboratory Science
4 Q.H.

(Prereq. Admission to physician assistant program or permission by instructor)

Basic laboratory methods employed in primary care, including urinalysis, gram staining, hematocrit, hemoglobin, sedimentation rate, white cell count, and differential.

MLS 1111 Basic Medical Laboratory Science Urinalysis
3 Q.H.

(Prereq. BIO 1107 and CHM 1122)

Introductory course in basic medical laboratory science covers principles and theories of renal physiology, with laboratory emphasis on techniques for chemical and microscopic detection of normal and abnormal constituents.

MLS 1121 Basic MLS Hematology 1
3 Q.H.

(Prereq. BIO 1107 and CHM 1122)

This introductory course in basis hematology procedures and principles covers hemoglobin, hematocrit, white and red blood cell counts, and white cell differentiation.

MLS 1122 Basic MLS Hematology 2
3 Q.H.

(Prereq. MLS 1121 or MLS 1321)

The course covers principles and procedures of hematology, with emphasis on hematologic cell maturation and morphology and basic hemostasis.

MLS 1131 Basic MLS Immunohematology — Serology
6 Q.H.

(Prereq. BIO 1107, CHM 1122)

This course is a study of in vitro and in vivo interactions between antigens on red blood cells and

corresponding antibodies and the proteins of the complement system. Didactic and laboratory exercises will emphasize immunohematology/blood banking and diagnostic immuno-serological techniques currently used in clinical laboratory practice.

MLS 1141 Basic MLS Clinical Microbiology
6 Q.H.*

(Prereq. CHM 1122, and BIO 1107)

The course focuses on basic principles and techniques of organism isolation, cultivation, and identification from clinical specimens. Elementary serologic procedures are discussed.

MLS 1151 Basic MLS Clinical Chemistry and Instrumentation
5 Q.H.*

(Prereq. MLS 1111 or MLS 1311, CHM 1221)

The course covers principles of clinical chemistry with application to procedures and techniques. Laboratory emphasis on instrumental analysis of specific clinical chemical specimens.

MLS 1311 Basic MLS Urinalysis
2 Q.H.

(Prereq. CHM 1122 and BIO 1107)

Introductory course in basic medical laboratory science. Principles and theories of renal physiology with laboratory emphasis on techniques for chemical and microscopic detection of normal and abnormal urinary tract constituents.

MLS 1321 Basic MLS Hematology 1
2 Q.H.

(Prereq. CHM 1122 and BIO 1107)

Introductory course in basic hematology procedures and principles: hemoglobin, hematocrit, white and red blood cell counts, and white cell differentiation.

MLS 1322 Basic Medical Laboratory Science Hematology 2
2 Q.H.

(Prereq. MLS 1121 or MLS 1321)

Principles and procedures of basic medical laboratory hematology, including basic hemostasis, are covered.

*Lab fee required.

MLS 1323 Advanced Hemostasis Techniques**2 Q.H.***

(Prereq. MLS 1122 or MLS 1322 or permission of instructor)

Lecture/laboratory course in advanced hemostatic techniques. Theory and methodology will be stressed, along with interpretation of laboratory results.

MLS 1324 Histochemistry**2 Q.H.***

(Prereq. MLS 1621 or MLS 4341 or permission of instructor)

The histochemistry of hemic cells and techniques used in diagnosis of hematological disorders are covered.

MLS 1330 Basic MLS Immunohematology**2 Q.H.***

(Prereq. BIO 1107)

Basic principles in immunohematology and related techniques, with particular emphasis on those procedures used in blood banking, are covered.

MLS 1331 Basic MLS Clinical Immunology**3 Q.H.***

(Prereq. BIO 1107 and CHM 1122)

Topics include basic principles of immunology, with laboratory emphasis on immunodiagnostic techniques currently used in clinical laboratory practice.

MLS 1332 Basis MLS Immunohematology**3 Q.H.***

(Prereq. BIO 1107)

The course covers basic principles in immunohematology, with specific application to the A, B, O, and Rh blood group systems, antibody detection, and crossmatch design. Basic blood bank techniques to include blood typing and cross-matching.

MLS 1333 Immunohematology**2 Q.H.***

(Prereq. MLS 1330 or MLS 1332)

This course offers advanced studies in antigen-antibody detection and problem solving through immunohematological tests. Discussion of related hematologic disorders and the medical/legal aspects of blood banking is included.

MLS 1341 Basic MLS Clinical Microbiology**4 Q.H.***

(Prereq. BIO 1107, and CHM 1122)

Basic principles and techniques of organism isolation, cultivation, and identification from clinical specimens are covered. Elementary serologic procedures will be discussed.

MLS 1351 Basic MLS Clinical Chemistry and Instrumentation**4 Q.H.***

(Prereq. CHM 1221 and MLS 1111 or MLS 1311) Principles, procedures, and techniques of basic clinical chemistry and instrumentation.

MLS 1412 MLT Special Topics — Applied Microscopy**2 Q.H.**

(Prereq. MLS 1101, MLS 1102, MLS 1111, MLS 1121, MLS 1122, MLS 1131, MLS 1141, MLS 1151, and admission to AD-MLT Clinical Program) Clinical practicum in applied urinalysis, parasitology, and mycology at an affiliated hospital providing MLT(ASCP) and CLT(NCA)-level instruction.

MLS 1423 MLT Applied Study in Hematology**2 Q.H.**

(Prereq. MLS 1101, MLS 1102, MLS 1111, MLS 1121, MLS 1122, MLS 1131, MLS 1141, MLS 1151, and admission to AD-MLT Clinical Program) Clinical practicum in hematology and coagulation at a Northeastern University-affiliated hospital providing MLT(ASCP) and CLT(NCA)-level instruction.

MLS 1432 MLT Applied Study in Blood Banking**2 Q.H.**

(Prereq. MLS 1101, MLS 1102, MLS 1111, MLS 1121, MLS 1122, MLS 1131, MLS 1141, MLS 1151, and admission to AD-MLT Clinical Program) Clinical practicum in blood banking at a Northeastern University-affiliated hospital providing MLT(ASCP) and CLT(NCA)-level instruction.

MLS 1442 MLT Applied Study in Clinical Microbiology**4 Q.H.**

(Prereq. MLS 1101, MLS 1102, MLS 1111, MLS 1121, MLS 1122, MLS 1131, MLS 1141, MLS 1151, and admission to AD-MLT Clinical Program) Clinical practicum in microbiology at a Northeastern University-affiliated hospital providing MLT(ASCP) and CLT(NCA)-level instruction.

MLS 1452 MLT Applied Study in Clinical Chemistry**2 Q.H.**

(Prereq. MLS 1101, MLS 1102, MLS 1111, MLS 1121, MLS 1122, MLS 1131, MLS 1141, MLS 1151, and admission to AD-MLT Clinical Program) Clinical practicum in clinical chemistry and urinalysis at a Northeastern University-affiliated hospital providing MLT(ASCP) and CLT(NCA)-level instruction.

MLS 1480 MLT Seminar 1**2 Q.H.**

(Prereq. MLS 1101, MLS 1102, MLS 1111, MLS 1121, MLS 1122, MLS 1131, MLS 1141, MLS 1151, and admission to AD-MLT Clinical Program) The course offers a basic introduction to correlation of laboratory findings in hematology, blood banking, microbiology, and clinical chemistry, with appropriate referrals of laboratory information in working situation. Basic use of quality control.

MLS 1523 Hematology MT Applied Study**4 Q.H.**

(Prereq. Acceptance of MT Clinical Program) Clinical practicum in applied hematology at an affiliated hospital medical technology program, which provides for MT(ASCP), CLS(NCA)-level instruction.

*Lab fee required.

MLS 1532 Immunohematology MT Applied Study 3 Q.H.

(Prereq. Acceptance to MT Clinical Program)
Clinical practicum in applied immunohematology at an affiliated hospital medical technology program, which provides for MT(ASCP), CLS(NCA)-level instruction.

MLS 1544 Clinical Microbiology MT Applied Study 7 Q.H.

(Prereq. Acceptance to MT Clinical Program)
Clinical practicum in applied microbiology at an affiliated hospital medical technology program, which provides for MT(ASCP), CLS(NCA)-level instruction.

MLS 1552 Clinical Chemistry MT Applied Study 7 Q.H.

(Prereq. Acceptance to MT Clinical Program)
Clinical practicum in applied clinical chemistry at an affiliated hospital medical technology program, which provides for MT(ASCP), CLS(NCA)-level instruction.

MLS 1621 Advanced Hematology 1 3 Q.H.

(Prereq. MLS 1122 or permission of instructor)
Topics include physiology of blood cells and bone marrow with a review of physiology of blood hemopoiesis; discussions of hematologic results as they relate to normal, anemic, and leukemic conditions.

MLS 1622 Advanced Hematology 2 — Hemostasis 2 Q.H.

(Prereq. MLS 1122 or permission of instructor)
Advanced studies in hemostasis with emphasis on factor identification and problem solving of hemostatic problems.

MLS 1631 Advanced Immunohematology 2 Q.H.

(Prereq. MLS 1332)
This course offers blood group systems, antibody identification, and advanced immunohematologic principles and procedures. Case studies will be presented.

MLS 1632 Immunology 5 Q.H.

(Prereq. BIO 1260, BIO 1261 or permission of the instructor)

Lecture: The lecture component will stress current concepts of immune function such as the structure and function of antigens and antibodies, the role of the major histocompatibility complex in cell-to-cell interactions, and the regulation of the immune response by suppressor cells. Topics discussed will be related to such clinical conditions as organ transplantation, cancer, and autoimmunity.

Laboratory: Experiments will be designed to introduce students to 1) animal immunization and bleeding techniques, 2) in vitro antigen assay methods, 3) cell separation and characterization, and 4) the preparation of monoclonal antibodies.

The laboratory section will also introduce students to various clinical laboratory assays utilized to detect certain immunodeficiencies.

MLS 1642 Medical Parasitology 3 Q.H.

(Prereq. MLS 1141)
Laboratory identification of significant human parasites. Life cycles related to mode of infestation, effect on man, and diagnostic form.

MLS 1643 Medical Mycology 3 Q.H.*

(Prereq. MLS 1341 or MLS 1141)
Laboratory identification of clinically significant fungi with a discussion of modes and types of infections.

MLS 1645 Advanced Clinical Microbiology 1 2 Q.H.

(Prereq. MLS 1141 or permission of instructor)
Topics include host and microbial interactions in disease produced by viruses, rickettsia, chlamydia, mycoplasma, mycobacteria, and actinomyces, with discussion of disease states and laboratory diagnostic procedures.

MLS 1646 Advanced Clinical Microbiology 2 2 Q.H.

(Prereq. MLS 1141 or permission of instructor)
Course covers host and microbial interactions in gastrointestinal, genitourinary, and respiratory tract infections; discussion of disease states and laboratory diagnostic procedures.

MLS 1647 Advanced Clinical Microbiology 3 2 Q.H.

(Prereq. MLS 1141 or permission of instructor)
Topics include host and microbial interactions in closed-space infections and in disease produced by staphylococci and anaerobic organisms. Methods for antibiotic susceptibility testing and principles of infectious disease control are also included.

MLS 1651 Advanced Clinical Chemistry 1 2 Q.H.

(Prereq. MLS 1151 or permission of instructor)
Course includes current methodologies and instrumentation used in clinical chemistry to evaluate hormonal conditions and drug level monitoring.

MLS 1652 Advanced Clinical Chemistry 2 2 Q.H.

(Prereq. MLS 1151 or permission of instructor)
Course includes metabolism of and procedures for nucleic acids, amino acids, proteins, lipids, and carbohydrates.

MLS 1653 Advanced Clinical Chemistry 3 2 Q.H.

(Prereq. MLS 1151 or MLS 1351 or permission of instructor)
Course includes a discussion of laboratory procedures used to evaluate acid-base balance, hepatic, renal, and gastrointestinal systems as well as vitamin and trace-metal blood levels.

*Lab fee required.

MLS 1661 Medical Laboratory Science Education 2 Q.H.
(Prereq. Completion of clinical program)
The course offers a survey of current topics in medical laboratory science education: developing objectives, methods of evaluation and certification, clinical instruction and evaluation, medical laboratory science curricula, and use of media and other methods of instruction.

MLS 1665 Medical Laboratory Management 2 Q.H.
(Prereq. Completion of clinical program)
The course offers a survey of factors that relate to effective laboratory administration: hospital organizational structure, principles of management and supervision, cost accounting, purchasing, inspection guidelines, legal responsibilities, and personnel relations.

MLS 1680 MLS Special Topics 2 Q.H.
(Prereq. MLS 1111 through MLS 1151)
The course offers a comprehensive examination of one or more current topics in the clinical laboratory.

MLS 1681 MLS Senior Seminar 2 Q.H.
The course provides a review of current undergraduate medical laboratory science topics.

MLS 1890 Undergraduate Research 2 Q.H.
(Prereq. Special permission)
The course examines special problems in laboratory medicine involving individual research under the direction of a faculty member.

MLS 1891 MLS Current Concepts 1 Q.H.
Topics for this course are determined by recent advances in medical laboratory science.

Health Record Administration

HRA 1100 Orientation to Medical Records I 1 Q.H.
This introductory seminar focuses on the issues, activities, and opportunities in the medical record profession.

HRA 1101 Orientation to Medical Records II 1 Q.H.
Continuation of seminar that introduces the medical record profession. Focuses on the tools utilized by the medical record professional.

HRA 1410 Health Record Science I 4 Q.H.
(Prereq. Two years of arts and sciences)
The course offers introduction to health records; history of the medical record and medical record forms. Included are a study of professional medical record administrators and their relation to the health facility, medical staff, and committees in the hospital. Quantitative analysis of medical records.

HRA 1420 Health Record Science II 4 Q.H.
(Prereq. HRA 1410)
This course covers the numbering, filing, security, and preservation of medical records; principles of law related to patient care and medical records; emphasis on the rules of privileged communications and the release of information to agencies.

HRA 1430 Health Record Science III 4 Q.H.
(Prereq. HRA 1420)
The course examines basic principles of compiling statistics for hospital and other health institutions. Topics include the preparation of the daily census and discharge analysis; monthly, annual, and special reports; birth and death certificates; principles of standardized nomenclature of diseases and operations and ICD-9-CM; and study of other indexes used in medical record departments.

HRA 1440 Advanced Health Record Science IV 4 Q.H.
(Prereq. HRA 1430)
This course covers advanced aspects of health/medical record science. Special focus is on the management of record systems in ambulatory, long-term, home care, and psychiatric settings.

HRA 1450 Applied Health Records Directed Practice I 3 Q.H.
(Prereq. HRA 1430)
Clinical practicum in medical record science in the general hospital.

HRA 1460 Applied Health Records Directed Practice II 2 Q.H.
(Prereq. HRA 1450)
Clinical practicum in medical record science in specialized health settings.

HRA 1470 Applied Health Records Science III 4 Q.H.
Clinical practicum in health/medical records management in the health-care facility.

HRA 1480 Clinical Seminar 2 Q.H.
Designed to integrate the didactic and the clinical experience at an early stage, the course provides a formal means by which students can share clinical developments with each other. It is designed to give them an opportunity to improve their competency in specific areas of medical record practice.

HRA 1510 Management of Health Record Services I 4 Q.H.
This course focuses on the medical record department within the health care setting. Lines of responsibility and authority, medical staff and administrative organization, hospital department functions and organization are examined, as are

fundamental principles and successful practices of office organization. An opportunity is provided for the student to develop the technical skills necessary to develop organization charts, policies, job descriptions, and job procedures.

HRA 1520 Management of Health Record Services 2 4 Q.H.

(Prereq. HRA 1510)

This course focuses on the medical record department within the health care setting. Budget and cost control mechanisms, organized labor and collective bargaining, office environment and layout, and the impact of state and federal regulations on medical record practices are examined. An opportunity is provided for the student to develop the technical skills necessary to plan and analyze budgets, to plan and design office layouts, and to evaluate the impact of regulations on particular medical record applications.

HRA 1530 Management of Health Record Services 3 4 Q.H.

(Prereq. HRA 1520)

This course focuses on the medical record department within the health care setting. Orientation programs; training programs; in-service education; interviewing, hiring, counseling, motivating, and disciplining employees; and communication skills are examined. An opportunity is provided for the student to develop an orientation and training program, and in-service presentation. Role-playing sessions and case studies are used to develop skill in interviewing, hiring, counseling, disciplining, and motivating employees. Emphasis is placed on verbal skills.

HRA 1540 Quality Assurance 4 Q.H.

(Prereq. HRA 1430, HRA 1440; HRA 1320 or permission of instructor)

This course is designed to provide the student with the opportunity to gain knowledge of the issues and problems involved in designing, implementing, and maintaining quality assurance programs for health-care facilities. An opportunity will also be provided for the student to gain the technical skills necessary to carry out all aspects of the audit process, emphasizing the professional's role as facilitator to physicians and other professional staff.

HRA 1550 Management Principles in Health Care 4 Q.H.

This course is an introduction to basic management principles. It is designed so that the hospital (or health-care facility) can provide that major source of example and case study, giving students an opportunity to synthesize abstract principles with practical application.

HRA 1560 Seminar in Health Records 2 Q.H.

(Prereq. Senior status)

Case study and discussion are used to integrate the discrete skills and knowledge of the profes-

sional curriculum into a meaningful whole by analysis of real and hypothetical problems. Coordination between the seminar and applied medical record science is emphasized.

HRA 1570 The Health Record Professional: Issues and Problems 2 Q.H.

(Prereq. Senior status)

This course provides the senior health record student with information on a range of topics that are germane to his/her professional role but that may not have been included in other professional courses.

HRA 1610 Introduction to Data Processing for the Health Services 4 Q.H.

This is an introductory course designed to introduce the student to the basic concepts of electronic data processing. Topics considered include input, output, storage, computation, and controls. The basic history of automation is reviewed and the concept of computer language is introduced, utilizing FORTRAN. Simple problems are completed on an individual and group basis.

HRA 1620 Systems Analysis 4 Q.H.

(Prereq. HRA 1550)

This course is designed as an introduction to systems analysis, its concepts, and techniques. Special application to health record management is stressed throughout the course.

HRA 1630 Applied Health Statistics 4 Q.H.

(Prereq. Basic statistics course)

Designed to provide the health record student with the opportunity to learn to apply basic statistical techniques to the gathering, analysis, and interpretation of health care and medical record data, as well as the effective use of these tools in such areas as department management and research studies. Agencies involved in collecting statistical data will be reviewed, with the types and sources of information they require; the relation of statistics, epidemiology, and medical records will also be considered.

HRA 1640 Medical Computer Applications 4 Q.H.

(Prereq. EDP Course I)

This course covers utilization of electronic data processing in health care. Overview of current activities and their impact on future trends in health record management information will be discussed. The role of the RRA as an information specialist will be considered.

HRA 1650 Health Record Education

This course is designed to prepare the health record administration student to function as an in-service educator. Topics include needs assessment, teaching techniques, and evaluation methodology.

HRA 1800 Independent Study 4 Q.H.
(Prereq. Permission of instructor)
This independent study project is designed to give students an opportunity to explore in depth a subject relevant to their interests. It is designed to give them the opportunity to study a problem, present a proposal, carry out a study or a course of action, and prepare both written and oral presentation of their activities.

HRA 1810 Special Topics I 2 Q.H.
The course provides specialized study in medical records.

HRA 1820 Special Topics II 2 Q.H.
The course provides specialized study in medical records.

Respiratory Therapy

RTH 1111 Respiratory Therapy Seminar I 1 Q.H.
This is a survey course designed to introduce the beginning respiratory therapy student to the role of respiratory therapists in health-care delivery.

RTH 1112 Respiratory Therapy Seminar II 1 Q.H.
This is a survey course designed to introduce the beginning student to therapeutic modalities of respiratory care.

RTH 1113 Respiratory Therapy Seminar III 1 Q.H.
Continuation of RTH 1112, including introduction to life-support systems.

RTH 1301 Professional Practice Laboratory I 1 Q.H.*
(Prereq. RTH 1331 concurrently)
This lab is designed to provide practice in basic care skills through laboratory exercises and simulation of patient-care situations.

RTH 1302 Professional Practice Laboratory II 1 Q.H.*
(Prereq. RTH 1301, RTH 1332 concurrently)
The lab is designed to provide students with hands-on experience in working with respiratory therapy equipment. Simulated patient-management problems will be set up in the lab to provide problem-solving experience.

RTH 1320 Cardiopulmonary Physiology 4 Q.H.
(Prereq. Satisfactory completion of the first-year courses)
The course is designed to provide a detailed introduction to the clinical diagnostic procedures employed in evaluating cardiopulmonary patients and description of the etiology, patho-physiology, diagnosis, and treatment of major cardiopulmonary diseases.

RTH 1331 Introduction to Patient Care 4 Q.H.
This course is designed to provide an opportunity for the student to gain knowledge and understanding of basic patient-care skills, including moving and positioning of patients, infection control, basic observation and assessment skills, and fa-

miliarity with the techniques of cardiopulmonary resuscitation. An opportunity will also be provided for the development of the student's interpersonal and communication skills.

RTH 1332 Introduction to Respiratory Care 4 Q.H.
(Prereq. RTH 1331 and pharmacology concurrently)
This course is basic to all other professional respiratory therapy courses. Focus is on the theory and application of medical gas administration and humidity/aerosol therapy.

RTH 1403 Professional Practice Laboratory III 1 Q.H.*
(Prereq. RTH 1302, RTH 1433 concurrently)
The lab is designed to provide students with hands-on experience with respiratory therapy procedures. Simulated patient-management problems will be set up in the lab to provide problem-solving experience.

RTH 1404 Professional Practice Laboratory IV 1 Q.H.*
(Prereq. RTH 1403, RTH 1434 concurrently)
The lab is designed to provide students with an opportunity to acquire experience in working with respiratory therapy life support equipment. Simulated critical care problems will be set up in the lab to provide problem-solving experience.

RTH 1411 Clinical Practice I 6 Q.H.
(Prereq. RTH 1332 completed and RTH 1433 concurrently)
This is the first course designed to provide clinical experience in hospitals. Focus is on respiratory care for noncritical patients. Emphasis is placed on infection control, medical gas administration, humidification of medical gases, aerosol therapy, chest physiotherapy, deep breathing treatments, and the administration of aerosol medications.

RTH 1412 Clinical Practice II 6 Q.H.
(Prereq. RTH 1433 completed and RTH 1434 concurrently)
The course is designed to provide clinical experience in hospitals. Emphasis is placed on respiratory care for critical patients. Advanced

*Lab fee required.

respiratory care topics such as airway care, mechanical ventilation, and positive and expiratory pressure are reviewed.

RTH 1414 Clinical Seminar I 1 Q.H.
(Prereq. RTH 1411 concurrently)

The seminar is designed to discuss clinical topics and respiratory-care problems encountered during clinical practice in the hospitals.

RTH 1433 Respiratory Care for the Medical and Surgical Patient 4 Q.H.
(Prereq. RTH 1332)

This course is a continuation of the introduction to respiratory therapy. It is designed as the didactic portion of beginning clinical experience on non-critical patients. Focus is placed on respiratory-care problems following major surgery and those problems related to medical patients.

RTH 1434 Respiratory Care for the Critical Patient 4 Q.H.
(Prereq. RTH 1433)

The course is the last in a sequence of three directly related to the theory of respiratory therapy procedures. It is designed as the didactic portion of clinical experience on critical patients. Focus is placed on respiratory-care problems encountered with patients in intensive care units.

RTH 1435 Introduction to Perinatal/Pediatric Respiratory Care 2 Q.H.
(Prereq. RTH 1434)

This course is designed to provide the student with the opportunity to acquire knowledge and understanding of human cardiopulmonary development from the time of conception through childhood years. Normal as well as abnormal manifestations of pregnancy, labor, and the process of delivering are also emphasized. Methods and techniques of assessment and delivery of respiratory care will relate to the pediatric patient's pathophysiology of cardiopulmonary disease.

RTH 1505 Cardiopulmonary Laboratory Practice 1 Q.H.*
(Prereq. RTH 1535 concurrently)

This course is designed as the laboratory portion of Cardiopulmonary Laboratory Technology. Focus is placed on the techniques of pulmonary functions testing, blood gas analysis, and cardiovascular testing commonly done in the clinical setting.

RTH 1511 Practicum In Critical Care 4 Q.H.
(Prereq. RTH 1574, RTH 1578 concurrently)

The course is designed to allow the student to select an area of emphasis from among the following: intensive care units, neonatal-pediatrics, or extracorporeal membrane oxygenation. During the practicum courses students are provided with an opportunity to work in their specialty areas.

RTH 1512 Practicum In Critical Care 4 Q.H.
(Prereq. RTH 1511)

This is a continuation of RTH 1511.

RTH 1516 Advanced Respiratory Therapy Seminar I 1 Q.H.
(Prereq. RTH 1571 concurrently)

This course is designed to complement RTH 1571, Advanced Life Support Systems I. Discussion of current clinical problems related to life-support systems will emphasize problems encountered in the hospital.

RTH 1517 Advanced Clinical Seminar II 1 Q.H.
(Prereq. RTH 1572 concurrently)

This course is designed to complement a professional elective taken concurrently. Discussion of current clinical problems and research related to problems encountered in the hospital.

RTH 1518 Advanced Clinical Seminar III 1 Q.H.
(Prereq. RTH 1511 concurrently)

Course is designed to complement RTH 1511, practicum in Critical Care. Discussion of current clinical problems and research related to critical-care problems is emphasized.

RTH 1519 Advanced Clinical Seminar IV 1 Q.H.
(Prereq. RTH 1512 concurrently)

Continuation of RTH 1518. Complements RTH 1512, practicum in Critical Care.

RTH 1535 Cardiopulmonary Laboratory Techniques 4 Q.H.
(Prereq. RTH 1321 and permission of instructor)

This course is designed to provide the student with an opportunity to gain knowledge and background in principles, theory, and procedures encountered in a clinical cardiopulmonary laboratory. Focus will be placed on the physiological foundations of cardiopulmonary testing.

RTH 1571 Advanced Life Support Systems I 4 Q.H.
(Prereq. RTH 1434)

Designed to introduce students to selected techniques of advanced life support applied to the critically ill patient.

RTH 1572 Perfusion Technology 4 Q.H.
(Prereq. RTH 1571)

Designed to introduce students specializing in perfusion technology to the theory, principles, and concepts of cardiovascular perfusion.

RTH 1574 Advanced Clinical Physiology 4 Q.H.
(Prereq. PAH 1204 and permission of instructor)

This lecture course is designed to enrich the respiratory therapy students' program by providing them with an opportunity for an in-depth exposure to medical physiology, based on the concept of the homeostatic state and its application to the clinical setting.

*Lab fee required.

RTH 1576 Neonatal Respiratory Care 4 Q.H.
(Prereq. RTH 1574)

The course is designed to provide the student with an understanding of the methods and techniques of respiratory therapy for neonatal patients. Emphasis is placed on mechanical ventilation, newborn care, and the respiratory distress syndrome.

RTH 1578 Advanced Medical Monitoring 4 Q.H.
(Prereq. RTH 1574)

The course is designed to enrich the students' program by providing them with an opportunity for an in-depth exposure to the theory and application of physiologic monitoring systems and their use in critical-care settings.

RTH 1631 Management of Respiratory Care Departments 4 Q.H.

The major purpose of this course is to expose respiratory therapy students to the techniques, theories, and tools of management which will enable them to develop a workable management system for respiratory care departments. The course is designed to provide an overview and a basic conceptual understanding of the role and the task of managing. It will deal with the functions, duties, and responsibilities of managers, and the things managers must do. Theoretical considerations will be alternated with practical applications (cases, questions and exercises) to enhance learning.

RTH 1632 Methods and Materials of Teaching Respiratory Therapy 4 Q.H.

A study of the systems approach to teaching respiratory therapy. The course covers development of instructional goals based on a needs assessment, behavioral learning objectives, instructional strategies, and evaluation instruments. Emphasis is placed on the use of criterion-referenced measurement strategies to evaluate mastery of clinical skills.

RTH 1633 Student Teaching and Seminar 4 Q.H.

Part-time participation twelve hours per week in a supervised respiratory therapy learning experi-

ence designed to provide practice with didactic, laboratory, and clinical teaching. The students will have an opportunity to demonstrate, evaluate, and develop their teaching skills. A one-hour seminar held weekly will discuss problems encountered in the classroom, laboratory, and hospital.

RTH 1634 Rehabilitation of Children with Respiratory Disorders 4 Q.H.

The course applies a broad definition of rehabilitation to the life situations of children with respiratory disorders. Students will have the opportunity to learn specific skills that address the recognition and management of acute and chronic problems. Model systems of psychosocial as well as physical support based on these skills will be developed. The course is open to students in health or human service disciplines who have had clinical or field experience.

RTH 1635 Practicum in Pediatric Pulmonary Rehabilitation 1 Q.H.

(Prereq. RTH 1634 or permission of instructor; enrollment limited)

Counselorship under medical direction at a one-week summer camp for children with severe pulmonary disorders. Students will apply skills acquired in RTH 1634 in residential camp situation and respond to medical or psychosocial problems in a manner consistent with current methods in his/her discipline. Group and individual discussions with the instructor will clarify insights and experiences. Daily case reports will document the learning process.

RTH 1801 Directed Independent Study I 2 Q.H.
(Prereq. RTH 1511 concurrently)

This is a course of directed study in a student's major wherein in-depth investigation of a special interest area is undertaken.

RTH 1802 Directed Independent Study II 2 Q.H.

(Prereq. RTH 1512 concurrently)
This is a course of directed study in a student's major wherein in-depth investigation of a special interest area is undertaken.

Physician Assistants

PA 1120 Roles, Rules, and Resources for Physician Assistants 2 Q.H.

This course is designed to help students who wish to understand the role of physician assistants, including the manner in which they interact with other health professionals, as well as the way in which their role is perceived by others. This course is also organized to help the student gain an understanding of the law as it relates to physician assistants' actions and to help them develop the ability to make referrals to common community resources.

PA 1125 Human Anatomy 2 Q.H.

This course covers the basic structure of the human body, with emphasis on the gastrointestinal, cardiovascular, respiratory, and musculoskeletal systems.

PA 1134 Essentials of History Taking and Physical Diagnosis 5 Q.H.

Course content includes techniques of obtaining and presenting an accurate history; performing a competent and thorough physical examination; and synthesizing the results of the history, physi-

cal, and laboratory findings to arrive at an accurate evaluation of the patient. Discussion, demonstrations, and patient workups are used to assist students in building these skills.

PA 1139 Medical Physiology 6 Q.H.

This course introduces a systematic approach to human physiology, offering in-depth study of gastrointestinal function, respiratory mechanics, endocrine function, cardiovascular dynamics, and renal and electrolyte function.

PA 1321 Patient Education and Counseling 2 Q.H.

(Prereq. PA 1335)

The purpose of this course is to provide students an opportunity to acquire the knowledge necessary for applying the teaching-learning process. Course materials include a demonstration of ways in which to evaluate patients' needs and readiness to learn, as well as the use of common teaching techniques for issues such as chronic disease management, ostomies, diabetes, heart disease, nutrition counseling, and sex education.

PA 1322 Medical Care and Current Social Problems 2 Q.H.

This course covers the principal components of the health care delivery system, with emphasis on services, organization, and funding. Selected social problems are used to demonstrate the operation of the medical care system.

PA 1323 Principles and Concepts of Emergency Medicine 3 Q.H.

(Prereq. Successful completion of Quarter I of the physician assistant program)

This course offers an introduction to the principles of life-support techniques. Emphasis is placed on the initial management of acute medical and traumatic conditions in hospital and prehospital situations. Students are instructed in basic cardiopulmonary resuscitation techniques.

PA 1324 Clinical Nutrition 3 Q.H.

This course covers the physiological function of essential nutrients; the need for individual nutrients and their food sources; food fads and food additives; the role of nutrition in heart disease, diabetes, common gastrointestinal disorders, obesity, and hypertension.

PA 1335 Principles of Interviewing 3 Q.H.

Various methods of interviewing patients are covered. Emphasis is placed on establishing a relationship and understanding the effects of cultural background and psychosocial problems on the patient's response to illness, goal setting, and personality types.

PA 1336 Pathophysiology and Medicine I 3 Q.H.

This course offers a systems approach to the principles of disease processes in people. Topics include physiology, pathophysiology, the natural

history of disease, diagnostic procedure, and therapeutic measures. Pathobiology, cardiology, gastroenterology, and pulmonary problems are usually covered in this portion of the course.

PA 1337 Pathophysiology and Medicine 2 3 Q.H.

(Prereq. PA 1336, PA 1125, PA 1139)

Continuation of course from previous quarter. Prerequisite: PA 1336 (see Quarter I). Hematology, immunology, rheumatology, and renal problems are usually covered in this portion of the course.

PA 1338 Pathophysiology and Medicine 3 3 Q.H.

(Prereq. PA 1336, PA 1337, PA 1125, PA 1139)

Continuation of course from previous quarter. Dermatology, oncology, infectious disease, and endocrine problems are usually covered in this portion of the course.

PA 1339 Physiological Basis of Disease 2 Q.H.

(Prereq. PA 1336, PA 1337, PA 1338, PA 1134)

Class sessions focus on the anatomy and physiology of the neurological system; understanding the functioning of nervous pathways, sensations, and motor neurons; disorders and disease states; and treatment and management.

PA 1340 Introduction to Clinical Rotations 4 Q.H.

Clinical rotations, expectations, and requirements are presented to students about to enter their clinical year. Some review of history taking and physical examination skills is conducted, and students are instructed in various clinical procedures.

PA 1341 Applied Study in Emergency Medicine 4 Q.H.

During this rotation, the student has the opportunity to become familiar with the problems encountered in an emergency room. The student is responsible for taking medical histories and performing physical examinations on acute as well as nonemergency patients and presenting these to the medical preceptor. When appropriate, the necessary diagnostic and therapeutic measures are taken. Through didactic sessions at the clinical site as well as clinical training, the student may also be exposed to the emergency management and treatment of conditions such as trauma, shock, burns, asthma, poisoning, allergic reactions, seizures, and respiratory failure.

PA 1342 Applied Study in Medicine 4 Q.H.

Rotating through hospitals, clinics, and private office settings, the student is given the opportunity to take and record histories and perform physical examinations. In attending medical rounds and conferences, performing diagnostic procedures, presenting case write-ups, recording progress notes, and working under the supervision of a doctor of medicine, the student has the opportunity to

become versed in the assessment and management of a variety of medical problems seen in primary care. Emphasis is placed on the skills of collecting, assessing, and presenting patient data for physician review; ordering appropriate laboratory and diagnostic studies; counseling patients in therapeutic procedures; and helping to coordinate the contributions of other health professionals in the management of the patient.

PA 1343 Applied Study in Pediatrics 4 Q.H.

During the pediatric rotation, the student has the opportunity to become familiar with outpatient pediatric problems through training in clinics and private pediatric offices. Emphasis during this training is on caring for the child from birth through adolescence. Students are given the opportunity to take histories and perform pediatric physical examinations. Diagnosis and management of common childhood illnesses and evaluation of the variations of growth and development are also stressed. Students have the opportunity to develop skills with which to counsel parents on immunizations, child visits, parameters of growth and development, common psychosocial problems, nutrition, and accident and poisoning prevention. Students may also have the chance to learn how to administer immunizations and, when possible, to do audio and visual screening.

PA 1344 Applied Study in Psychiatry 4 Q.H.

The student is offered exposure to a wide variety of psychiatric problems. Clinical settings include wards, clinics, and multiservice centers. Students are expected to perform mental status exams and to do cognitive testing. Emphasis is on recognizing various types of psychiatric problems that require referral to a specialist and managing those problems that can be handled by the nonspecialist. Rotations may also assist students in furthering their understanding of effective patient interactions and the psychiatric components of health, disease, and disability.

PA 1345 Applied Study in Obstetrics and Gynecology 4 Q.H.

The student has the opportunity to become involved with obstetric and gynecological services provided by teaching hospitals in the Boston area. The emphasis in obstetrics is on pre- and post-natal care, monitoring a woman in labor, assisting in deliveries, and developing the skill necessary to deliver a child in an emergency situation. Students have the opportunity to take obstetrical histories and perform obstetrical examinations. While rotating through gynecology, the student is expected to learn how to assess and manage a variety of common gynecological problems and to counsel patients on family planning.

PA 1346 Applied Study in Primary Care 4 Q.H.

Students on primary care rotations are offered exposure to aspects of general medical and family practice with emphasis placed on personalized care

of well and sick patients. Patient education, counseling, and integration of community services, as well as medical diagnosis and management, are considered a major part of this rotation.

PA 1347 Principles of Obstetrics and Gynecology

3 Q.H.

(Prereq. PA 1134, PA 1125, PA 1336, PA 1337, PA 1139)

This course focuses on the anatomy and physiology of human reproduction; normal conception, pregnancy, and delivery; problems in conception; the management of pre- and post-natal periods; and the care and resuscitation of the newborn. Emphasis is on the causes, signs, and treatment of common gynecological problems, including the significance of early cancer detection. Different methods of contraception, the effectiveness of each method, and the contraindication, if any, are covered. The course also covers the medical indications for abortion and the appropriateness of the various methods of pregnancy termination.

PA 1348 Principles of Orthopedics 3 Q.H.

(Prereq. PA 1125, PA 1336, PA 1337, PA 1139)

Students have the opportunity to learn about common orthopedic problems, including those of the hand, knee, shoulder, and back. Special problems of acute trauma and the management of uncomplicated orthopedic cases are examined. Instruction also focuses on the techniques of completing an adequate patient history and physical examination of the orthopedic patient.

PA 1349 Principles of Pediatrics II 3 Q.H.

(Prereq. PA 1353)

Continuation of course from previous quarter.

PA 1350 Principles of Primary Care Management

3 Q.H.

This course deals with the approach to and management of the patient in a primary care setting. Specific diseases and medical conditions common to primary care practice will be discussed, including low back pain, anxiety, fatigue and weight loss, chest pain, gastrointestinal problems, upper respiratory infections, obesity, and dermatologic complaints. Attention is given to psychosocial aspects of disease as well as aspects of prevention. Students are expected to have a sound basis in pathophysiology and medicine.

PA 1351 Fundamentals of Electrocardiography

2 Q.H.

(Prereq. PA 1336, PA 1337)

Basic principles of electrophysiology and its application to electrocardiographic tracing are discussed. Instruction focuses on recognizing arrhythmias, rate and axis determinations, conduction abnormalities, characteristic changes seen in myocardial infarction and ischemia, as well as drug and metabolic effects manifested on the electrocardiogram. Students have the opportunity to gain experience in implementing their

knowledge in interpretation of EKGs through slide presentations and teaching-file EKGs. Although not part of this course, instruction is also offered in the technique of taking a twelve-lead electrocardiogram.

PA 1352 Survey of Rehabilitation Medicine

2 Q.H.

(Prereq. PA 1336, PA 1337, PA 1338, PA 1134, PA 1139)

This course provides students an opportunity to learn techniques of effective planning and decision making for patients with multiple chronic problems. The purposes, techniques, and potential of rehabilitation medicine are also discussed.

PA 1353 Principles of Pediatrics I

3 Q.H.

(Prereq. PA 1125, PA 1134, PA 1136, PA 1139)

The course offers a study of both the physiological and psychological fundamentals of child development, including immunizations and their administration, indication, or contraindication. Emphasis is on the major common pediatric illnesses, their signs, symptoms, and treatment regimens; various types of medications used in pediatrics, their indication and dosage in relation to specific disorders; and the management of pediatric emergencies such as cardiac arrest, anaphylaxis, convulsions, coma, and high fevers.

PA 1354 Principles of Psychiatry

3 Q.H.

(Prereq. PA 1134)

This course offers students the opportunity to learn to understand and work with patients and families exhibiting psychiatric problems. Topics include psychological growth and development, the effect of social milieu on behavior, the psychological bases of drug and alcohol abuse, and the dynamics of psychosomatic problems.

PA 1355 Principles and Concepts of Surgical Intervention in Disease Processes

3 Q. H.

(Prereq. PA 1336, PA 1337, PA 1125, PA 1134)

Students are introduced to major surgical conditions, with emphasis on indications for surgical intervention and pre- and post-operative management.

PA 1356 Basic Diagnostic Radiology

2 Q.H.

The course provides an introduction to the underlying principles, use, and interpretation of radiographs pertinent to primary care medicine.

PA 1357 Cancer Prevention

3 Q.H.

(Prereq. PA 1336, PA 1337, PA 1338, PA 1139)

Principles of primary and secondary prevention of cancer are presented. Included in the course is information on biostatistics, cancer as a public health problem, and cancer epidemiology.

PA 1358 Medical Therapeutics

3 Q.H.

(Prereq. PA 1336, PA 1337, PA 1338, PA 1139)

A case-study format that involves students in planning the management of common disease states is used to help them understand the clinical use of common therapeutic agents.

PA 1359 Applied Study in Surgery

4 Q.H.

(Prereq. Successful completion of Qtrs. I, II, and III in the Physician Assistant Program)

During this rotation students participate in a variety of surgical patient care responsibilities under the supervision of a surgical resident and/or staff surgeon. The emphasis of the rotation is on general surgery, but the students have an opportunity for varying exposure to other surgical specialties and sub-specialties. Students assist in the initial assessment of the surgical patient, including obtaining an accurate medical history and performing a physical examination. As members of the surgical team, the students are involved in pre-operative management, including patient education and any procedures necessary to prepare the patient for surgery. Students assist the surgeon in the operating room when appropriate and have the opportunity to become familiar with operating room procedures and equipment. Students are also involved in the post-operative evaluation and management of the patient. Students will have the opportunity to attend surgical grand rounds and other surgically oriented educational meetings when available at their rotation sites.

PA 1360 Applied Study in Outpatient Medicine

4 Q.H.

(Prereq. Successful completion of Qtrs. I, II, and III in the Physician Assistant Program)

During this rotation the students participate in providing health care to the outpatient adult patient under the supervision of a physician specialist in internal medicine. The students will have the opportunity to become involved in the initial assessment and management of adults with medical complaints as well as the ongoing assessment and management of patients with established diagnosis. It is anticipated that the student will be exposed to many of the common problems encountered in medical practice, such as hypertension, diabetes, and heart disease. The emphasis is on the assessment and management of both acute and chronic medical problems.

PHL 3265 Medical Ethics

3 Q.H.

This course is designed to help familiarize students with various philosophical perspectives in medical ethics, including historical, classical, ethical, and contemporary philosophies regarding issues such as abortion, truth telling, genetic control, and the allocation of scarce medical resources. Euthanasia and paternalism are among topics discussed during the course.

SOC 3225 The Aging Process

3 Q.H.

Socioeconomic and social-psychological consequences of aging are examined from the perspective of health care providers. A major part of the course focuses directly on the biological changes entailed in aging and the appropriate medical management of geriatric patients. Open to students expected to provide health care services to geriatric patients.

Nursing

NUR 1100 Introduction to Professional Nursing and the Health Sector 4 Q.H.

The first course in nursing introduces the student to concepts of health, the health care delivery system, professional nursing and roles in nursing. A variety of societal and environmental factors that affect the health care system in general and nursing practice in particular will be examined.

NUR 1101 The Theoretical Basis for Nursing Practice 4 Q.H.

This course introduces the philosophical and theoretical basis for the practice of nursing. Major nursing theorists are surveyed. The role of theory and its use in nursing practice is discussed. The concepts and theories that constitute the conceptual framework of the curriculum are emphasized. From the perspective of adaptation theory as the organizing theme of the curriculum, concepts essential for learning the professional nursing practice role are introduced. Building from the concepts about health and illness introduced in NUR 1100, the concepts *client*, *human need*, and *nursing process* are explored. Communication as an essential professional role behavior is emphasized.

NUR 1102 Human Nutrition 4 Q.H.

The study of the science of nutrition provides the student the opportunity to plan and select a nutritionally adequate and prudent diet; recognize food and nutrition misinformation; utilize objectivity when working with individuals to meet their nutritional needs; and recognize the importance of nutrition and its relation to health. The course will examine the physiological functions of the major nutrients and food sources, as well as common areas of consumer concern about nutrition.

NUR 1200 Nursing 6 Q.H.

(Prereq. NUR 1100, NUR 1101, NUR 1102, CHM 1111, CHM 1112, BIO 1140, BIO 1141, BIO 1295) This is the first nursing course with a clinical practicum. Students will implement the nursing process using Maslow's motivational theory for clients requiring assistance in meeting selected basic needs. Knowledge and skill in interviewing, health-team communication, and professional role are further developed.

NUR 1201 Nursing 6 Q.H.

(Prereq. NUR 1200, BIO 1190, BIO 1293) Students in the second nursing course with a clinical practicum will continue to implement the nursing process using Maslow's motivational theory for clients requiring assistance in meeting selected basic needs. Learning experiences are planned for the student to gain knowledge and skill in patient education and health-team collaboration. Additional opportunity is provided for the student to further develop the professional role and interpersonal relationship skills.

NUR 1300 Common Problems II 7 Q.H. (Prereq. NUR 1201)

The nursing process is continued and implemented in more complex situations. Assessment of client/patient status and nursing interventions are centered on individuals with pathophysiological and psychological disturbances. Major content areas addressed are: adaptation to inflammations, immunity, stresses or pre- and post-operative experiences, and metabolic responses related to alteration in health status. The effects of the client/patient's altered status on family members are explored. Students are introduced to drug therapy and begin administration of medications. Under faculty guidance, students develop a teaching plan and nursing care analysis for selected clients. Learning experiences are planned for students to provide for continuity of patient care through collaboration with clients, health team members, and appropriate community agencies.

NUR 1301 Psychiatric/Mental Health Nursing 7 Q.H.

(Prereq. NUR 1300 or NUR 1302)

This course is designed to help students develop a beginning knowledge of mental and emotional illness through a basic understanding of the dynamics of human behavior and beginning skills in therapeutic intervention. The student is introduced to the concepts of family and group therapy and crisis intervention techniques.

NUR 1302 Transition 9 Q.H.

(Prereq. CHM 1111-107, BIO 1140-142, BIO 1293-144, BIO 1295, PSY 1111-106, BIO 1190)

The first nursing course for registered nurse students in the baccalaureate degree program introduces the purposes and objective of this program and the philosophy of baccalaureate education. It also broadens students' perspectives of professional nursing and provides opportunities to complement and validate, through guided and independent study, students' knowledge of roles and role conflicts, the communication process, group dynamics, and the nursing process.

NUR 1400 Maternal and Child Nursing 9 Q.H.

(Prereq. PSY 1241, PCL 1305, and NUR 1300 or NUR 1302)

The focus of this course is on the application of the nursing process in maintaining optimal health for child-bearing and child-rearing families from various cultural and social backgrounds. Opportunity is provided for students to apply nursing process with clients at selected developmental stages and to assist families in coping with stresses that interfere with health. Learning experiences provided assist the student in furthering personal and professional development.

NUR 1401 Medical-Surgical Nursing 9 Q.H.
(Prereq. NUR 1300, PCL 1305)

Focus is placed on the effects of episodes of acute illness on individuals, families, and society. Alterations and adaptations in physiology characteristic of acute episodes of illness and the nurse's role in intervention are discussed. Content also includes discussion of the impact of illness on patterns of living, needs for health teaching, and continuity of care. Guided clinical experiences are planned, with emphasis on the use of the nursing process and the development of those skills necessary to plan and implement care for the adult who is in an acute care setting.

NUR 1500 Community Health Nursing 9 Q.H.
(Prereq. NUR 1401, NUR 1400, PSY 1242, SOC 1100)

This course provides an opportunity for students to increase their understanding of the variety of ways in which families, groups, and communities organize to meet the health and welfare needs of their members. Particular attention is given to the role of the nurse in planning with individuals, families, groups, and community agencies to meet recognized needs. Themes occurring throughout the course include political implications of health care delivery and current research that affects family

and group health and community nursing. Values clarification and cultural experience of nurse and client are also explored. Laboratory experience involves work with individuals families, and communities.

NUR 1501 Contemporary Issues In Nursing 5 Q.H.
(Prereq. NUR 1401, NUR 1400, SOC 1100)

This course provides the student with the opportunity to examine the current body of nursing knowledge as it is organized within the various conceptual models of nursing. Student will also analyze contemporary issues in nursing within the context of the historical background of the profession and those forces which influence it. Present and future roles of the professional nurse are discussed.

NUR 1502 Introduction to Research in Nursing 4 Q.H.
(Prereq. NUR 1401, NUR 1400, SOC 1100)

This course builds on students' prior exposure to selected studies applied to nursing. Both qualitative and quantitative research are discussed. The value of each to the practice of nursing and the significance of research in nursing to both practitioner and consumer are emphasized.

Criminal Justice

CJ 1101 Administration of Criminal Justice 4 Q.H.

This course surveys the contemporary criminal justice system from the initial contact with the offender through prosecution, disposition, incarceration, and release to the community. Emphasis is placed on major systems of social control: police, corrections, juvenile justice, mental health systems, and their policies and practices relative to the offender. A balance is maintained in providing legal, empirical, and sociological materials.

CJ 1110 Topics in History of Criminal Justice 4 Q.H.

The course provides a historic survey of the principles of criminal justice in the ancient and medieval periods, with emphasis upon the impact of religion and philosophy.

CJ 1111 Topics in History of Criminal Justice 4 Q.H.

A continuation of the historic survey with an examination of the effects of the Renaissance and the Reformation, and the rise of nation states.

CJ 1112 Critical Issues in Criminal Justice and Criminology 4 Q.H.

Introduces students to the major issues and ethical considerations facing criminal justice and criminology today. There will be six to eight major

critical, moral, and ethical issues discussed. Core topics could be (but are not confined to) the death penalty, abortion, euthanasia, abolition of the insanity plea, victimless crimes (prostitution, drug abuse, gambling), and gun control. These issues will be presented in the format of pros and cons and will involve student presentations or debates.

CJ 1113 Critical Issues in Criminal Justice Administration 4 Q.H.

Provides a comprehensive understanding of the major issues in the functional areas of law enforcement, private security, prosecution, and courts. This course is designed to stimulate and reflect the controversial characteristics of many criminal justice operations. Students are exposed to these debates through the objective presentation of all sides of the issues.

CJ 1151 Introduction to Law and the Legal Process 4 Q.H.

Provides an introduction to the law and the legal system of the United States. It sets forth the fundamentals of our legal process and provides a summary description of both the private and public law system. Its goal is to present an overview of the traditional structure, as well as the basic principles of law.

CJ 1201 Criminology**4 Q.H.**

The course covers patterns and evolution of criminal behavior, the social forces involved, and development of the individual criminal; administration of criminal justice — law, courts, police, prisons.

CJ 1251 Criminal Law**4 Q.H.**

The course deals with the area of criminal responsibility, some of its limitations, and certain modifications substantially affecting it. The course requires an ability to express in writing both the knowledge of a particular concept and the ability to identify it in a complex fact pattern and discuss its implications and ramifications.

CJ 1252 Constitutional Problems**4 Q.H.**

(Prereq. CJ 1251)

This is a required course focusing on a historical evaluation of the Fourteenth Amendment and its use in making rights prescribed under the Bill of Rights applicable to the individual states. Also detailed in the course are the inherent problems of the Fifth and Sixth Amendments, including the effect of their implications on such matters as police practices, illegal search and seizure, and right to counsel. Students are expected to be familiar with basic concepts as well as changing interpretations so that they can cite cases that may stand as precedents for conclusions they draw.

CJ 1301 Introduction to Private Security**4 Q.H.**

The course examines the organization and administration of security and loss prevention programs in industry, business, and government. Emphasis is placed on the protection of assets, personnel, and facilities, and focuses on the relations between security organizations and government agencies.

CJ 1311 White-Collar Crime**4 Q.H.**

Intends to give the student a basic understanding of white-collar crime. The course will cover such topics as: nature and extent of white-collar crime, the social-psychologic makeup of white-collar crime — typologies, present efforts directed toward controlling it, and understanding the inter-agency and jurisdictional problems and the benefits of cooperation.

CJ 1312 Organized Crime**4 Q.H.**

Provides the student with an understanding of the phenomenon labeled "organized crime." It is approached from the law enforcement perspective; however, the general criminal justice implications are stressed. The corruptive influences of the phenomenon are dealt with, as well as the over-zealous enforcement aspects which lead to violations of constitutional safeguards. The nature of intelligence activities and computerized information concerning organized crime are explored, as well as the sensitive privacy issues that are concerned. Problems of definition, identification of participants, attainment of public understanding

and support, legal limitations in dealing with the phenomenon, and the involvement of otherwise reputable citizens as consumers or unwitting allies are discussed. Strategies, both present and proposed, for controlling or eliminating organized crime are considered. Finally, the relationship of this phenomenon to "white-collar crime" is evaluated.

CJ 1313 Private Security Operations and Methods**4 Q.H.**

(Prereq. CJ 1301)

A study of the application of physical, personnel, communication, and transportation security methods to functional area security systems. Analysis of industrial, commercial, institutional, transportation, and communication security systems to identify commonalities and specific needs. Special attention is given to major areas, including banks and financial institutions; airports, airlines; commercial complexes; educational, hospital, hotel, museum, and library facilities; manufacturing, transportation, and retail businesses; computer and communication networks; and governmental installations, contractors, and grantees.

CJ 1314 Private Security Administration and Management**4 Q.H.**

(Prereq. CJ 1313 or CJ 1301)

Deals with the administrative and managerial roles of the security director. The security director is considered the advocate of security to top management, and, as a member of the management team, is enabled to integrate security into company operations. Special attention is given to the planning, organizing, staffing, directing, controlling, representation and innovation responsibilities of the security director. His or her role in the professionalization of the security vocation, in stimulating research and in dealing with significant issues, is also explored.

CJ 1315 Private Security Science and Technology**4 Q.H.**

(Prereq. CJ 1301 or equiv.)

Acquaints students with options and applications of today's scientific and technological products. An attempt is made to prepare students in the area of security planning and develop in them the managerial skills needed to plan security systems using the state-of-the-art modern-day technology.

CJ 1318 Terrorism**4 Q.H.**

Attempts to give the student an understanding of what terrorism is and why it has become so popular. Topics examined will include: the role of news media, political consequences of terrorism, the military as a resource, and the role of the hostage.

CJ 1401 Law Enforcement Administration and Management**4 Q.H.**

The course covers the principles of police organization, administration, and management,

including staff and line functions, chain of command, span of control, selection of personnel, and promotional systems. Consideration is also given to special problems such as strikes, natural and atomic disasters, narcotic traffic, and vice control.

CJ 1411 Police Operations 4 Q.H.
(Prereq. CJ 1401)

The course offers a general survey of police operational procedures, including patrol, traffic, interrogations, and report writing. Role playing is used extensively to demonstrate interviewing methods.

CJ 1421 Police-Community Relations 4 Q.H.
(Prereq. CJ 1401, CJ 1411, and junior or senior status)

The course covers police-public contact; uses of the communications media in projecting the police image; responsibilities of police in dealing effectively with minority groups, civil rights, civil disorder, and public protection. An exploration of the role and function of the police in intergroup relations is also included.

CJ 1422 Human Factors in Policing 4 Q.H.
(Prereq. CJ 1411)

This course focuses on the theory and practice of human relations and conflict management necessary for effective policing. It is recommended for those with a career interest in policing.

CJ 1423 Criminal Justice Planning 4 Q.H.
(Prereq. CJ 1452; a statistics course; and middler, junior, or senior standing)

The course examines criminal justice planning theory and methods. Emphasis is on the need for criminal justice planning and the tools used in the planning process. Students in small groups are expected to prepare a sample criminal justice plan during the term.

CJ 1424 Seminar in Law Enforcement 4 Q.H.
(Prereq. CJ 1401, CJ 1411, and junior or senior standing)

The course provides an opportunity for free discussion about the numerous problems facing the law enforcement officer. Periodic oral and written reports are required. Guest lecturers are invited to participate in and lead discussion sessions. An effort is made to have students formulate their own philosophy of law enforcement prior to graduation.

CJ 1425 Police Discretion 4 Q.H.
(Prereq. Middler, junior or senior standing)

This course examines the nature and impact of discretion as it relates to police decision making. Attention is given to various forms of police discretion and ways in which it can be structured, confined, and checked. Students have the opportunity to examine and learn to analyze sample police department policies and study different formal and informal methods of developing policies. Students also study the relation of discretion to controlling police behavior and police corruption.

CJ 1451 Criminal Justice Research 4 Q.H.
(Prereq. MTH 1010 or equiv., and middler, junior, or senior standing)

This is a survey course of methods for basic and applied research in criminal justice, combining statistics and research methods. While providing minimal research literacy, this course concentrates on research application by stressing discussion of the general role of research in the discipline and specific contributions advanced by studies in the literature.

CJ 1452 Research Methods in Criminal Justice 4 Q.H.
(Prereq. A statistics course and middler, junior, or senior standing)

The course focuses on development of research design of the kind most useful to criminal justice problems; understanding some of the most important issues and problems facing researchers in the field; use of various data collection methods, including observation, interviewing, questionnaire construction, and scales for survey analysis; validity and reliability; computer application in criminal justice.

CJ 1471 Criminalistics I: Criminal Investigation 4 Q.H.

The course focuses on criminal investigation dealing with areas of investigation, case preparation, and applied physiology.

CJ 1472 Criminalistics III: Arson and Fire Investigation 4 Q.H.

A course in the examination and behavior of fire. Deals with fire-related phenomena such as convection, radiation, contact, and ignition and includes consideration of arson, explosions, asphyxiation, and combustibility. The course will also cover fireproofing agents such as plastics, textiles, building materials, and the chemistry of the halogens. Finally, some time is given to areas of fire experimentation and the potential for more sophisticated inquiry.

CJ 1473 Criminalistics II: Forensic Laboratory 4 Q.H.*

(Prereq. CJ 1471 and permission of instructor)
The course provides a survey of the elements of microscopy, spectroscopy, and basic chemistry as they apply to the study of firearms, hair, fibers, blood, paint, tools, glass, documents, laundry marks, poisons, and other materials that comprise physical evidence.

CJ 1501 Evidence I 4 Q.H.
(Prereq. CJ 1251, CJ 1252)

The goal of this course is to provide students the opportunity to develop their understanding of the manner in which legal issues and disputes are resolved by trial. Study will focus on the manner in which the trial system works and the reasoning behind the rules governing its operation, including rules of evidence: the mechanics of the ad-

*Lab fee required.

versary system, relevancy, reliability, and rules of exclusion based upon policy considerations other than relevancy and reliability. Learning tools will include videotapes, mock trials, observation of actual court trials, lectures, take-home assignments, and exams.

CJ 1502 Evidence II 4 Q.H.
(Prereq. CJ 1501)

This course continues with reliability and rules of exclusion, based upon policy considerations other than relevancy and reliability as set forth in Part I.

CJ 1511 Survey of Criminal Evidence 4 Q.H.
(Prereq. CJ 1251, CJ 1252)

This survey course focuses upon the fundamentals of criminal trial procedure and the rules of evidence as they apply to the trial of a criminal case. Students are required to read and brief criminal court cases.

CJ 1512 Seminar in Law and Criminal Justice 4 Q.H.
(Prereq. CJ 1251, CJ 1252, and junior or senior standing)

Specific topic to be announced.

CJ 1601 Survey of Correctional Systems 4 Q.H.
(Prereq. CJ 1201)

The course offers an introduction to penology and corrections, exploring the public reaction to convicted offenders historically, while concentrating on issues and programs of contemporary corrections.

CJ 1611 Theories in Penology 4 Q.H.
(Prereq. SOC 1100 and CJ 1201)

The course offers a philosophical approach to the development of punishment in the United States, as examined in a historical context. Issues of justice and morality are considered as they are manifested in contemporary penal structure. Readings include selections from eighteenth-, nineteenth-, and twentieth-century novelists, philosophers, and criminologists.

CJ 1612 The Administration of Juvenile Justice 4 Q.H.
(Prereq. SOC 1100, CJ 1201)

Course work examines the juvenile court, its philosophy, procedure, and personnel. Focus is on the discretionary processes by which juveniles are labeled delinquent, dependent, and neglected.

The roles played by police, prosecution, defense, bench, and social service workers are considered. Field visits are arranged.

CJ 1613 Probation and Parole 4 Q.H.
(Prereq. CJ 1601)

The course examines the nature and problems of correctional field service, both adult and juvenile.

CJ 1614 Correctional Institutions 4 Q.H.
(Prereq. CJ 1601)

The course offers an analysis of the organization and administration of correctional institutions.

CJ 1615 Crime and Criminal Justice: A Comparative View 4 Q.H.
(Prereq. CJ 1101, SOC 1100, or equiv.)

The course examines the problems of crime and its control from a comparative perspective. Countries such as the Soviet Union, China, France, East and West Germany, Great Britain, Holland, Finland, and Sweden are analyzed in terms of incidence and type of deviance and crime, as well as in terms of their approach to social control and the prevention of crime. Points of divergence between these countries and the United States will be examined, with regard to their perceived causes of crime and their differing approaches to rehabilitation and crime prevention.

CJ 1616 Women and the Criminal Justice System 4 Q.H.
(Prereq. Middler, junior, senior standing)

This course is intended to introduce students to issues relating to roles taken by women involved with the criminal justice system and to the system's various responses to women in these roles. Specific focus will be directed toward women as victims of crime, as offenders, and as practitioners.

CJ 1617 The Female Offender 4 Q.H.
(Prereq. SOC 1100 and CJ 1201)

The course addresses itself to the female at various stages in the criminal justice system, from commission of a crime to parole. Both the juvenile and adult offender are studied. The thrust of the course is a critical analysis of existing theory and research on the female offender, with emphasis on the socialization, roles, and social participation of society at large.

The male offender is also considered at each level for purposes of comparison.

CJ 1801, CJ 1802, CJ 1803, CJ 1804 Directed Study (each) 4 Q.H.

Military Science

AIR 1110 The Air Force Today 1 Q.H.
Examines the role of the U.S. Air Force in the contemporary world. Topics include background, mission, and organization of Air Force and func-

tions of U.S. strategic forces. Also, emphasis is placed on development of written communicative skills.

AIR 1111 Leadership Laboratory I 1 Q.H.

Introduction to the customs, traditions, and courtesies of the Air Force through guest speakers, seminars, and a field trip to an Air Force base.

AIR 1120 Air Force Today 1 Q.H.

Continues study of the contemporary Air Force by examining general purpose forces, aerospace support forces, and the total force structure.

AIR 1121 Leadership Laboratory II 1 Q.H.

Continues AIR 1111 with emphasis on the role and responsibilities of an Air Force company grade officer.

AIR 1130 The Air Force Today 1 Q.H.

The third and final portion of the study of the contemporary Air Force of today. This portion of the course gives a more in-depth study of the total force structure.

AIR 1131 Leadership Laboratory III 1 Q.H.

Continues AIR 1121 with emphasis on a more in-depth study of the roles and responsibilities of Air Force company grade officers.

AIR 1210 The Development of Air Power 1 Q.H.

History of the development of air power from balloon experiments up through World War II. Emphasis on interrelation of technology, doctrine, historical events. Student participation and presentations are emphasized to enhance verbal communicative skills.

AIR 1211 Leadership Laboratory IV 1 Q.H.

Emphasizes development of techniques used to direct and inform. Students are assigned leadership and management positions in the AIR 1111 programs described above.

AIR 1220 The Development of Air Power 1 Q.H.

History of airpower since 1946, with emphasis on the U.S. Air Force. Includes the role of air forces in conflicts and the effect of space-age technology on air power. Also an examination of the employment of U.S. air power in peaceful ways.

AIR 1221 Leadership Laboratory V 1 Q.H.

Continues AIR 1211. Adds a special program in preparation for field training.

AIR 1310 Management and Leadership I 4 Q.H.

Management and leadership from the point of view of the Air Force junior officer. The individual motivational and behavioral processes, leadership, communication, and group dynamics are covered to provide a foundation for the development of the junior officer's professional skills as an Air Force officer.

AIR 1311 Leadership Laboratory VI 1 Q.H.

Supervisory practice and exercise of leadership functions in controlling and directing activities of

the cadet group. Development of leadership potential in a practical, supervised training laboratory.

AIR 1320 Management and Leadership II 4 Q.H.

Continues AIR 1310 with special emphasis on the basic managerial processes involving decision making, utilization of analytical aid in planning, organizing, and controlling in a changing environment. Organizational and personal values, management of forces in change, organizational power, politics, and managerial strategy and tactics are discussed within the context of the military organization. Actual Air Force cases are used to enhance the learning and communication processes.

AIR 1321 Leadership Laboratory VII 1 Q.H.

Continues AIR 1311. Emphasis on supervisory and leadership skills. Emphasis on advantages of an Air Force career.

AIR 1410 The Military in American Society 4 Q.H.

Study of the military's role as an institution in a democratic society. Topics: civil-military interaction and the military as a profession. Emphasis on developing communicative skills through student presentations.

AIR 1411 Leadership Laboratory VIII 1 Q.H.

Exercise of management functions in planning, supervising, and directing cadet group activities. Opportunity to acquire proficiency in military leadership skills.

AIR 1420 U.S. National Security 4 Q.H.

Study of the role of the military in maintaining the security of the United States. Examines the international environment, the background of defense policy, strategy, and forms of conflict. Addresses specific issues, including weapons acquisition, arms control, nuclear deterrence, and the national military decision-making process.

AIR 1421 Leadership Laboratory IX 1 Q.H.

Continues AIR 1411. Students prepare themselves for professional duties.

ARM 1100 Leadership Lab I 0 Q.H.

Introduction of first-year ROTC students to the basic tenets of discipline and regimentation of the U.S. Army. Includes the basics of proper wear of military clothing, proper rendering of military courtesies, military customs and traditions, individual and group drill and ceremonies, manual of arms for the M16A1 rifle, and physical fitness training. Attendance required for all first-year cadets enrolled in an ROTC course.

ARM 1101 The Army Structure 1.5 Q.H.

An introduction to the Army's force structure and its relation to the other military services at Defense Department level. The course analyzes the Army's

major command groups down to division level to include mission, location, and branch requirements. The course defines each Army branch (infantry, armor, field artillery, etc.) to include the branch mission and nature of the primary duty associated with an officer's assignment to a particular branch.

ARM 1102 Basic Leadership Skills 1.5 Q.H.

Basic Leadership Skills is a modular training course designed to teach leadership and management concepts. There are four modules, each designed to illustrate particular management skills: problem analysis and decision-making, planning and organizing, delegation and control, and interpersonal skills. Realistic management simulations and structured exercises are the primary methods used to teach essential leadership skills.

ARM 1103 Tactical Simulations 1.5 Q.H.

Mission, organization, and composition of the basic infantry rifle squad. Includes basic combat formations, movement techniques, unit capabilities, and planning considerations. Uses the Dunn-Kempf wargame in a series of practical exercises that apply classroom instruction through use of a boardgame and miniatures simulating the modern battlefield.

ARM 1200 Leadership Lab II 0 Q.H.

Introduction and hands-on training for the second-year ROTC cadets. Includes required basic military skills, including nuclear, biological, and chemical protective training; selected weapons training; use of U.S. Army communications equipment; land navigation; orienteering; rappelling; and limited military vehicle maintenance training. Attendance required for all second-year ROTC cadets enrolled in an ROTC course.

ARM 1201 Marksmanship 1 Q.H.

Instruction and practical application in basic rifle marksmanship techniques, safety, and range operation. The course will cover sanctioning bodies rules for small-bore rifle competition firing, preparation for competition firing, preparation for competition, and intra-class competition.

ARM 1202 Contemporary Military Doctrine 1.5 Q.H.

The historical development of U.S., Soviet, and other selected military philosophies and resultant force development and employment are presented as a basis for the examination of the organization, weapons, equipment, doctrine, tactics, and capabilities of combat, combat support, and combat service support units.

ARM 1203 Methods of Instruction 1.5 Q.H.

This course provides an introduction to the concept of training management, including the fundamentals of teaching, principles of learning, and the establishment of training objectives. In addition, students will demonstrate proper instruction-

al techniques and lesson plan preparation and conduct classroom instruction. For the most part, specific emphasis is given to hands-on student participation and performance-oriented training.

ARM 1301 Land Navigation 2 Q.H.

Identify map symbols to natural and manmade features; identify/use military grid reference system; measure straight line and read distance on a map; measure and plot an azimuth; convert azimuth from grid to magnetic grid; grid; locate an unknown point using polar coordinates; locate an unknown point using intersection; locate an unknown point using resection; locate an unknown point using modified resection; determine the evaluation of a specific point on the map. Inspect a compass for accuracy; navigate from one point on the ground to another.

ARM 1302 Military Teams 2 Q.H.

Introduction to the fundamentals of offensive and defensive combat at the squad and platoon levels, continuing on through combined-arms tactics at the company level. Includes unit organizations and capabilities, tactical planning, combat orders; utilizes practical exercises placing the student in leadership roles in simulated tactical environments.

ARM 1303 Advanced Leadership Clinic 2 Q.H.

Classroom, programmed instruction, and practical exercises (e.g., land navigation, physical conditioning, weapons familiarization, and leadership) designed to prepare cadets for maximum individual performance at the six-week ROTC advanced camp, Fort Devens, MA. This course is required for all cadets attending advanced summer camp at Fort Bragg, NC.

ARM 1305 Advanced Leadership Lab V 6 Q.H.

External leadership lab conducted at Fort Bragg, North Carolina, during the summer quarter. Intensive six-week course includes application of leadership principles in positions at varying levels of responsibility. Supplemental instruction includes: physical conditioning, counseling, senior-subordinate relations, tactical doctrine, international laws of land warfare, and approaches to problem solving. Course attended by students from 123 colleges and universities from Maine to Florida. All expenses are borne by the U.S. Government, including a stipend of approximately five hundred dollars.

ARM 1400 Leadership Lab IV 0 Q.H.

Practical application of previously learned skills, techniques, education, and experience by fourth-year ROTC cadets by assisting ROTC cadre in the conduct of ARM 1100, ARM 1200, and ARM 1300. Cadets prepare and present instruction, manage constrained resources, and supervise subordinates. Evaluation is based on active-duty Army criteria. Attendance required for all fourth-year ROTC cadets enrolled in an ROTC course.

ARM 1401 Organizational Dynamics 2 Q.H.

This course will examine the theory, methods, and principles for understanding and motivating human behavior in organizations. The principles and dynamics of leadership will be emphasized and directed toward the development of leadership styles. Practical applications will be made through the use of case studies and group processes.

ARM 1402 Military Law 2 Q.H.

This course considers in detail the issues and responsibilities imposed by law on commanders and staff officers in two broad areas: the military criminal justice system and military administrative law. Practical guidance for identifying and resolving issues of law is stressed. In the criminal law area, the course presents in-depth analysis of the responsibilities and duties of officers and noncommissioned officers concerning the military justice system. Administrative law subjects focus on the legal basis for command and on administrative due process; judicial review of military activities and other topical issues in this area of law.

ARM 1403 The Military as a Profession 2 Q.H.

This seminar course provides the advanced ROTC student with the opportunity to examine the military as a profession and to discuss military professional ethics. The course will address the characteristics, uniqueness, and roles of the profession of arms and responsibilities of the professional soldier to the Army and the nation. Students will develop an understanding of the need for ethical conduct and an awareness and sensitivity to ethical issues. The course will present case studies on current issues and discuss problems typically encountered by new officers.

NAV 1100 Naval Science Lab 0 Q.H.

A period devoted to either drill instruction or to practical work to complement classroom instruction. This course must be taken in each class quarter by all NROTC students.

NAV 1101 Introduction to Naval Science**3 Q.H.**

A general introduction to the naval profession and to concepts of seapower. Instruction emphasizes the mission, organization, and warfare components of the U.S. Navy and Marine Corps. Included is an overview of officer and enlisted ranks and rates, training and education, and career patterns. The course also covers naval courtesy and customs, military justice, leadership, and nomenclature. This course exposes the student to the professional competencies required to become a naval officer.

NAV 1102 Naval Ships Systems 1 4 Q.H.

A detailed study of ship characteristics and types including ship design, hydrodynamic forces, stability, compartmentation, propulsion, electrical and auxiliary systems, interior communications, ship control, and damage control. Included are

basic concepts of the theory and design of steam, gas turbine, and nuclear propulsion. Also discussed are shipboard safety and firefighting.

NAV 1201 Naval Ships Systems II 4 Q.H.

This course outlines the theory and employment of weapons systems. The student explores the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. Fire control systems and major weapons types are discussed, including capabilities and limitations. The physical aspects of radar and underwater sound are described in detail. The facets of command, control, and communications are explored as a means of weapons system integration.

NAV 1202 Seapower and Maritime Affairs**3 Q.H.**

A survey of the U.S. naval history from the American Revolution to the present with emphasis on major developments. Included is an in-depth discussion of the geopolitical theory of Mahan. The course also treats present-day concerns in seapower and maritime affairs, including the economic and political issues of merchant marine commerce, the law of the sea, the Russian navy and merchant marine, and a comparison of U.S. and Soviet naval strengths.

NAV 1301 Navigation and Naval Operations I**4 Q.H.**

An in-depth study of piloting and celestial navigation, including theory, principles, and procedures. Students learn piloting navigation, including the use of charts, visual and electronic aids, and the theory and operation of magnetic and gyro compasses. Celestial navigation is covered in depth, including the celestial coordinate system, an introduction to spherical trigonometry, the theory and operation of the sextant, and a step-by-step treatment of the sight reduction process. Students develop practical skills in both piloting and celestial navigation. Other topics discussed include tides, currents, effects of wind and weather, plotting, use of navigation instruments, types and characteristics of electronic navigation systems, and the day's work in navigation.

NAV 1302 Navigation and Naval Operations II**4 Q.H.**

A study of the international and island rules of the nautical road, relative-motion vector-analysis theory, relative motion problems, formation tactics, and ship employment. Also included is an introduction to naval operations and operations analysis, ship behavior and characteristics in maneuvering, applied aspects of ship handling, and afloat communications.

NAV 1310 Evolution of Warfare 4 Q.H.

This course traces historically the development of warfare from the dawn of recorded history to the present, focusing on the impact of major military

theorists, strategists, tacticians, and technological developments. The student acquires a basic sense of strategy, develops an understanding of military alternatives, and sees the impact of historical precedent on military thought and action.

NAV 1401 Leadership and Management I

3 Q.H.

A comprehensive advanced-level study of organizational behavior and management in the context of the naval organization. Topics include a survey of the management functions of planning, organizing, and controlling, an introduction to individual and group behavior in organizations, and extensive study of motivation and leadership. Major behavioral theories are explored in detail. Practical applications are explored by the use of experiential exercises, case studies, and laboratory discussions. Other topics developed include decision making, communication, responsibility, authority, and accountability.

NAV 1402 Leadership and Management II

3 Q.H.

The study of naval junior officer responsibilities in naval administration. The course exposes the student to a study of counseling methods, military justice administration, naval human resources management, directives and correspondence, naval personnel administration, material management and maintenance, and supply systems. This capstone course in the NROTC curriculum builds on and integrates the professional competencies developed in prior course work and professional training.

NAV 1410 Amphibious Warfare

4 Q.H.

An historical survey of the development of amphibious doctrine and the conduct of amphibious operations. Emphasis is placed on the evolution of amphibious warfare in the twentieth century, especially during World War II. Present-day potential and limitations on amphibious operations, including the rapid deployment force concept, are explored.

Cooperative Education

COP 1130 Career Advisement for Criminal Justice I

1 Q.H.

(Prereq. Criminal Justice freshmen only)

The first in a three-course sequence, taught by the students' freshman adviser, aims to assist students in adjusting to college life, developing college survival skills, and becoming familiar with the broad range of careers in the field of criminal justice. Classes are augmented with individual meetings with the instructor/adviser.

COP 1131 Career Advisement for Criminal Justice II

1 Q.H.

(Prereq. COP 1130 or permission of freshman adviser)

Students are introduced to cooperative education and its implications for career planning. Work and personal values, interests, skills, and lifestyles are examined in terms of their relation to career options within the field of criminal justice.

COP 1132 Career Advisement for Criminal Justice III

1 Q.H.

(Prereq. COP 1131)

The final course in the three-course sequence is devoted to the preparation of a personal résumé, an introduction to interviewing techniques, and the setting of short-term educational and vocational goals. Students are required to research criminal justice jobs using the career exploration system.

COP 1135 Professional Development for Journalists

1 Q.H.

(Prereq. Journalism freshmen only)

The course contains current career information in the field of journalism. It is designed to prepare journalism students for the cooperative education experience as well as to introduce them to the academic preparation necessary to pursue a successful career in the journalist profession. The course teaches effective résumé writing, letters of application, and interviewing techniques specifically geared to those who intend to pursue a career in journalism.

COP 1180 Career Decision Making

4 Q.H.

(Prereq. Freshmen or sophomores in any major or permission of instructor)

A life/career planning course designed to meet the needs and concerns of students who may be undecided or uncertain about their academic major or career direction. Activity-oriented classes address the needs of the group, as well as individual participants, and emphasize self-assessment, career exploration, decision making, and goal setting.

COP 1220 Working in the United States

4 Q.H.

(Prereq. International students only)

A career development course for international students in their first-through-third years. The course is designed to help international students compete more effectively for cooperative education positions in the United States and assist them in their cultural transition into the American work force. Topics include work-oriented cross-cultural

issues; the American work ethic; skills development; résumé writing; and interviewing techniques.

COP 1314 Life/Career Planning 4 Q.H.

(Prereq. Juniors and seniors only)

Highly participatory classes, open to juniors and seniors in any of the Basic Colleges, focus on career exploration, self-assessment, job-search techniques, and networking. Students are required to prepare a professional résumé, participate in videotaped mock interviews, research careers, and investigate graduate and professional schools.

COP 1351 Placement Techniques 1 Q.H.

Career selection and development are discussed concurrently with résumé preparation, interviewing techniques, and effective written communication to facilitate the planning and implementation of a professional career program.

COP 1353 Professional Development for Education and Speech-Language Pathology and Audiology 1 Q.H.

An examination of career management issues for fourth year students. Topics include: work and personal values, current issues in the employment market, planning for graduate study, organizing and conducting a job search, advanced résumé preparation, and interviewing techniques.

COP 1356 Career Management in Physical Therapy 1 Q.H.

Career management in physical therapy is examined in view of professional development and career opportunities; other discussions include résumé preparation, communications, and the interview process.

COP 1360 Nursing Career Management 4 Q.H.

The course provides the opportunity for the student to explore traditional and nontraditional nursing careers and education, the world of work, personal and work values, lifestyle, and career management techniques including skills identification, résumé writing, sources of career information, evaluating a potential employer, assertiveness, and selected current issues relevant to nursing careers.

COP 1365 Professional Development for Civil Engineers 4 Q.H.

The course is designed to foster self-assessment skills and to enhance personal and professional growth, as well as to provide a forum for civil engineering students to exchange views on current professional issues and topics.

Interdisciplinary Courses

INT 1100 Introduction to Art, Drama, and Music 4 Q.H.

This interdisciplinary course offers an integrated approach to three related disciplines: art, drama, and music. Basic vocabulary and analytical techniques are established for each discipline, emphasizing such common elements as color, line, rhythm, texture, and form. Representative works from various periods are examined in the context of the cultures that produced them, and lectures focus on parallels and contrasts among the three disciplines' manifestations of specific trends, principles, and ideals. Lectures, readings, and listening assignments are supplemented by visits to art galleries and attendance at concerts and theatrical performances.

INT 1110 American Musical Theatre 4 Q.H.

This interdisciplinary course, offered by the departments of drama and music, traces the development of the American musical from the *Black Crook* to *A Chorus Line*. The role of musical theatre, both as entertainment and as serious art form, is considered through an examination of script, score, dance, and design. Works by Bern-

stein, Rodgers and Hammerstein, the Gershwins, Weill, Lerner and Loewe, and Cole Porter are studied.

INT 1150 Introduction to Women's Studies: Image, Myth and Reality 4 Q.H.

This is an introductory survey of the issues and methodology involved in the interdisciplinary study of women. Such a survey encompasses the historical, political, economic, and social processes that have created both the image and the reality of women in society. Guest lecturers provide an overview of the many different disciplinary approaches to the study of women. This course is required for Women's Studies minors and may be used as either a general elective or, depending upon the discipline of the coordinator, to satisfy specific concentration requirements.[†]

INT 1151, 1152 Women's Studies: Seminars in Research (each) 4 Q.H.

These interdisciplinary Women's Studies seminars allow students to address problems in-depth by researching a topic of particular interest. Careful development of a research plan is encouraged,

[†]Satisfies Core Curriculum Category II requirement.

and opportunities are provided for sharing work-in-progress and for exchanging findings. These courses involve little in-class time, but much consultation with appropriate faculty. The final product of seminar work and research is a major paper. Students in the Honors program may substitute one quarter of honors registration for each seminar, but are still expected to attend the formal sessions of the seminar. These seminars are required for Women's Studies minors.

INT 1161 Introduction to Irish Studies 4 Q.H.

Introduction to Irish Studies is offered from the perspective of a number of fields in one-week sequences: art, business, drama, history, literature, music, politics, and sociology. The purpose of the course is to introduce students to the important forces that have helped to shape contemporary Ireland and Irish-American culture.

INT 1201 An Analysis of American Racism

4 Q.H.

This seminar in contemporary aspects of racism in America discusses the cycle by which racism in our institutions helps form our attitudes, and the manner in which our attitudes, in turn, shape our institutions. Emphasis is on the practical, day-to-day aspects of racism, rather than the theoretical and historical.

INT 1215 Into the Ocean World 4 Q.H.

This course is a comprehensive interdisciplinary introduction to the oceans. The seas' complexity and the far-reaching consequences of our interactions with them demand an awareness of the many facets of marine study. The teaching team consists of specialists in the sciences, social sciences, humanities, and arts, each with an interest in marine issues and a commitment to bridging the gaps among disciplines. The course themes are as broad as the oceans, but, when appropriate, we focus on Boston harbor, a first step into the ocean world for those of us in this area.

INT 1216 A History of Seafaring 4 Q.H.

This course surveys maritime transportation, trade, travel, exploration, and warfare from approximately 3500 B.C. to the end of the wooden boat era in the late nineteenth century. Prior to the widespread application of steam power on land and sea in the nineteenth century, ships were the fastest, safest, and most economical means of transporting large cargoes over long distances. Literary and art history sources are also introduced, along with several films on maritime archaeology.

INT 1217 Water, Water 4 Q.H.

This course is an interdisciplinary introduction to our most precious resource. Water has affected our bodies, our planet, our history, and our culture. How we manage it will shape our future. Because of increasing demand, waste, and pollution, we are depleting—and risk destroying—the lim-

ited supply of usable fresh water. This course will look at water through scientific, historical, and cultural viewpoints, and survey contemporary water problems in all their dimensions—political, economic, and technological.

INT 1330 Field Experience in Human Services I

4 Q.H.

Human services students are required to fulfill two fieldwork placements during the last two years of their program. Placement consists of 150 hours on site and generally varies according to the student's interest. Examples of placement sites include community centers, nursing homes, vocational workshops, state and federal agencies, programs for children, and recreational facilities. Experiences are supervised by University staff to maximize the students' learning opportunities.

INT 1331 Field Experience in Human Services 2

4 Q.H.

(Prereq. INT 1330 and Junior or Senior standing)
A continuation of INT 1330.

INT 1333 Senior Seminar in Human Services

4 Q.H.

This course is designed for seniors specializing in human services. The course examines emerging roles and career options within the human services field. Study focuses on self-examination of attitudes and values affecting delivery of services; exploration of ethical issues and dilemmas relevant to human services, grantsmanship and funding issues; staff supervision and development within human services agencies; and refinement of group leadership skills.

INT 1340 Cultural Aspects of International Business

4 Q.H.

(Prereq. Middler standing)

Using a managerial perspective, this course will cover issues that arise when a firm moves from its home country to a host country that may have a different national culture. Although it will usually take the perspective of the United States-based firm that operates abroad, the course will spend some time on what happens to other national firms operating in the United States and in third-country environments. The way in which "corporate culture" evolves, in the context of national culture and the impact on managers, will be a central issue.

INT 1345 The Olympics

4 Q.H.

The course examines the Olympics as a total institution. Analysis focuses on the history, philosophy, economics, and politics of the games and how they impact on nations throughout the world. Contemporary problems focused on in this course range from race, sex, and drug abuse, to the use of the Olympics as a stage for international politics.

INT 1346 Women in Sports

4 Q.H.

The course focuses on the changing relationship of women and their experience in sport. Special

reference to the history of women's participation (and lack of it) in sport is presented, as well as, attention to women in amateur and professional and collegiate and precollegiate sports participation. The course will detail these developments within the context of social problems and current trends in American sports.

INT 1400 Professional Practices: Individual and Social Dimensions 4 Q.H.

The course explores the dimensions and dilemmas of freedom and responsibility confronting professional people practicing within limits set by socioeconomic conditions, clients, and other professionals. Case histories are examined to illustrate the dilemmas professionals face, the choices that are typically made, and their consequences on the freedom of the practitioner and on personal and professional integrity.

INT 1401 Health Professionals: Past, Present and Future 4 Q.H.

This course focuses on the social history of the modern health professions. The course explores long-range patterns in the organization and regulation of the health professions, beginning with the Middle Ages and emphasizing the Jacksonian period, industrialization, modern professional organizations, the growing role of the state, responses of the health professions, and the future of health care in the United States under various corporate-government schemes for reorganizations and "accountability".

INT 1420 Honors Seminar: Survey of the Social Sciences 4 Q.H.

This course is designed to provide an introduction to important ideas and scholarship in the social sciences for honors students who have completed the freshman year. A two-week period will be devoted to each of the following disciplines: economics, sociology/anthropology, political science, history, and psychology. Topics vary from year to year, depending on the faculty team that teaches the course.

INT 1421 Honors Seminar: Survey of the Natural Sciences 4 Q.H.

This course is designed to provide an introduction to important ideas and scholarship in the natural

sciences for honors students who have completed the freshman year. A two-week period is devoted to each of the following disciplines: chemistry, biology, earth science, mathematics, and physics. Topics vary from year to year, depending on the faculty team that teaches the course.

INT 1422 Honors Seminar: Survey of the Humanities 4 Q.H.

This course is designed to provide an introduction to important ideas and scholarship in the natural sciences for honors students who have completed the freshman year. A two-week period will be devoted to each of the following disciplines: art, music, drama, literature, and philosophy. Topics vary from year to year, depending on the faculty team that teaches the course.

INT 1580 Physical Chemistry with Biological Applications 4 Q.H.

(Prereq. BIO 1236)

This course examines physiochemical principles as they apply to biological processes. Topics include chemical equilibria, reaction kinetics, basic thermodynamics, oxidation-reduction reactions, bioenergetics, macromolecules in solution, and transport. The approach is quantitative, and problem solving as a tool for learning is emphasized. Basic assumptions and limitations underlying principles are explained; for the most part, however, rigorous derivations are avoided. Applications to basic experimental techniques in biochemistry are made by way of relevant biochemical examples.

INT Interdisciplinary Honors Seminars 4 Q.H.

One seminar is scheduled for the fall, winter, and spring terms. Course numbers and content vary from year to year because seminars are selected competitively from among faculty applications to the honors committee. Seminars to be offered are announced in May for the following school year. A list of seminars offered for the current year is available from the honors program office. Freshmen, sophomores, and middlers are encouraged to enroll. Juniors and seniors are considered for enrollment if class size permits.

Alternative Freshman-Year Program

The following courses will be offered in the Alternative Freshman-Year Program during the 1984/1985 academic year.

ECN 4100 Economics I 4 Q.H.

Topics include development of macroeconomic analysis; review of national income concepts; national income determination fluctuation and

growth; role of the banking system and the Federal Reserve System; government expenditures and taxation; international trade; and balance of international payments.

MGT 4105 Introduction to Business and Management Intensive**4 Q.H.**

The course offers an introduction to the setting and general structure of American business, the characteristics of private enterprise, and the nature and challenge of capitalism and other forms of economic enterprise. The forms of business, the structure of organization, and the functions of management are discussed in the context of their influence on the various forms of business. Through lecture and class discussion the student is given an overview of the methodologies used in planning, organizing, directing, and controlling the functions of production, marketing, sales, pricing, and finance.

CI 4001 Integrated Language Skills Development I**2 Q.H.**

This course strives to improve a student's reading comprehension and related study and language skills. The course devotes time, discussion, and considerable practice to meaning skills such as basic reading comprehension and interpretation, including work in critical reading and other interpretational acts (inferences, understanding imagery, and symbolic usage). Study skills, previewing, finding main ideas and details, outlining and summarizing, continuous interaction, and interaction of all the communications skills—reading, writing, listening, and speaking.

CI 4002 Integrated Language Skills Development II**2 Q.H.**

(Prereq. CI 4001)

ENG 4013 Fundamentals of English I**4 Q.H.**

An intensive introduction to the principles of effective expository writing; emphasis on description, paragraph construction, and organization; review of the conventions of English usage, punctuation, and syntax; essay assignments.

ENG 4014 Fundamentals of English II**4 Q.H.**

Intensive instruction in exposition, argument, and academic essay writing; instruction in the writing of a research paper; continued emphasis on the conventions of English usage, punctuation, and syntax; essay assignments.

HST 4110 History of Civilization A**4 Q.H.**

The major ideas and institutions of civilization from ancient times to 1648.

HST 4111 History of Civilization B**4 Q.H.**

(Prereq. HST 4110)

A continuation of HST 4110, covering the period since 1648.

MTH 1000 Mathematical Preliminaries I**4 Q.H.**

A review of precollege mathematics, primarily arithmetic. Topics covered include operations with numbers, fractions, decimals, percents, and graphs (pictographs, bar graphs, circle graphs, etc.), together with applications of these skills and concepts. The sequel of this course is MTH 1010.

MTH 1010 Mathematical Preliminaries II**4 Q.H.**

A survey of precollege algebra, including signed numbers, exponents, multiplication of polynomials, factoring, linear equations, graphing, and radicals. The course is intended for students whose background in precollege algebra is weak.

MTH 1113 College Mathematics for Business**4 Q.H.**

Topics include sets, rectangular coordinates and graphs, functions and functional notation, linear and quadratic functions, exponential and logarithmic functions, systems of linear equations, summations, inequalities, permutations and combinations, elementary probability concepts, arithmetic and geometric progressions, simple and compound interest, annuities.

POL 4101 Introduction to Political Science I**4 Q.H.**

A study of the basic political concepts and forces of organization from the classical Greeks to the modern nation-state. The Soviet Union and the United Kingdom are contrasted as contemporary illustrations of the institutional distinction between a totalitarian and a constitutional system.

POL 4102 Introduction to Political Science II**4 Q.H.**

Consideration of the development of operational liberty in the United States and its constitutional underpinnings. Analysis of the national American political process and the conduct of recent American foreign relations.

SOC 4010 Principles of Sociology I**4 Q.H.**

An introduction to basic concepts and theories relating to the study of humans as participants in group life. Socialization, culture, social structure, primary groups, family, social stratification, and population are emphasized.

SOC 4011 Principles of Sociology II**4 Q.H.**

(Prereq. SOC 4010)

A continuation of SOC 4010, Principles of Sociology I, with emphasis on critical analysis of American society with particular attention to problems of social, political, urban, and industrial change.

COP 4010 Self-Awareness and Career Exploration**2 Q.H.**

A life/career planning course designed to meet the needs and concerns of Alternative Freshman-Year students. Activity-oriented classes address the needs of students who may be undecided or uncertain about their academic major or career direction. Emphasizing self-assessment, career exploration and decision making, the course introduces the student to cooperative education and its implications for career planning. (Students completing this course will thereby become ineligible for COP 1180, Career Decision Making, since much of the course content is similar.)

Academic Calendar 1984—85

September 1984

3	Monday	Labor Day. University closed.
4 – 7	Tuesday – Friday	Final examinations for Basic Colleges.
10 – 17	Monday – Monday	Division B vacation.
13	Thursday	Fall commencement.
14	Friday	Transfer, international, and handicapped students orientation.
17	Monday	Freshman orientation, Boston, Class of 1989. Freshman University orientation and testing.
18	Tuesday	Upperclass registration; 9:00 a.m.
18	Tuesday	Transfer registration; 2:00 p.m.
19	Wednesday	Burlington orientation. New freshman course registration.
19	Wednesday	9:00 a.m. Complete upperclass registration, complete freshman course registration; 1:00 p.m.
20	Thursday	Classes begin in Basic Colleges for fall quarter.

October 1984

8	Monday	Columbus Day. University closed.
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November 1984

12	Monday	Veterans Day observed. University closed.
22 – 25	Thursday – Sunday	Thanksgiving recess.

December 1984

10 – 14	Monday – Friday	Final examinations for Basic Colleges.
17 – January 1, 1985	Monday – Tuesday	Christmas vacation.

January 1985

1	Tuesday	New Year's Day. University closed.
2	Wednesday	Basic Colleges only. Orientation of all newly admitted students in Basic Colleges. Upperclass registration; 9:00 a.m. Divisions A and C. Start of University College and Lincoln College, graduate winter quarter. Registration of continuing freshmen and new freshmen; 1:00 p.m.
3	Thursday	Classes begin for Basic Colleges and day graduate classes; 8:00 a.m.
15	Tuesday	Martin Luther King, Jr.'s Birthday. University closed.

Academic Calendar 1984—85

February 1985

18 Monday Presidents Day. University closed.

March 1985

18 – 22 Monday – Friday Final examination for Basic Colleges.

25 – 30 Monday – Saturday Vacation period for all students in all colleges and schools. (Division A vacation).

April 1985

1 Monday Registration for Divisions B and C, and Division A seniors. Registration for freshmen (quarter three) at Boston campus, Burlington campus, and January freshmen (quarter two). Beginning of spring quarter. Beginning of Division A work period. No Basic College classes today.

15 Monday Patriots' Day. University Closed.

May 1985

27 Monday Memorial Day. University closed.

June 1985

10 – 14 Monday – Friday Final examinations for Basic Colleges (nondegree candidates).

16 Sunday Commencement.

17 – 22 Monday – Saturday Division B vacation.

24 Monday Registration for Divisions A and D, and January freshmen (quarter three). Beginning of summer quarter. Beginning of Division B work period. No Basic College classes today.

July 1985

4 Thursday Independence Day. University closed.

September 1985

2 Thursday Labor Day. University closed.

3 – 6 Tuesday – Friday Final examinations for Basic Colleges.

12 Thursday Fall commencement.

9 – 16 Monday – Saturday Division A vacation.

16 Monday Beginning of 1985-86 academic year.



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